



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

ENT
265C

HARVARD UNIVERSITY.



LIBRARY

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY.

14005

Bought

January 16. — December 20, 1900

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE :

CONDUCTED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. McLACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

LORD WALSINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. XI.

[VOL. XXXVI.]

"If all the eggs laid by insects came to maturity, the earth would be overwhelmed with them, and every green thing would be devoured."—*Packard.*

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

1, PATERNOSTER ROW.

1900.

Or³

LONDON :

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE, N.W.

MDCCCC.

INDEX.

	PAGE		PAGE
CONTRIBUTORS	i	SPECIAL INDEX (<i>continued</i>)—	
GENERAL INDEX	iii	Hymenoptera	xi
SPECIAL INDEX—		Lepidoptera	xii
Coleoptera	ix	Neuroptera	xiii
Diptera	x	GENERA AND SPECIES NEW TO SCIENCE.....	xiv
Hemiptera	xi	" " " " " BRITAIN.....	xv
		ERRATUM	xv

INDEX TO CONTRIBUTORS.

	PAGE		PAGE
Adams, F. C., F.Z.S.....	14	Edwards, James, F.E.S.	279
Bailey, J. Harold, M.B.	11	Elliman, E. Geo.	11, 236
Baker, George	240	Elliott, Ernest A., F.E.S.	147
Banks, Eustace R., M.A., F.E.S.....	9, 115, 125, 132, 158	Enock, F., F.L.S.	161
Barrett, C. G., F.E.S.	4, 9, 140, 159	Evans, William, F.R.S.E. ...	87, 88, 159, 188, 243, 265, 288
Barrett, Frances	140	Farn, A. B., F.E.S.	259
Bateson, W., M.A., F.R.S.	139	Fleming, Rev. W. W., M.A., F.E.S.....	28
Bazett, Mrs. E. C.	275	Fowler, Rev. Canon W. W., M.A., F.L.S....	262, 286
Beare, Prof. T. Hudson, B.Sc., F.R.S.E....	12, 190, 262	Freke, Percy E., F.E.S.....	63
Beauford, W. F.	238	Gahan, C. J., M.A., Sec. E.S..	20, 68, 94, 116, 139, 163, 215, 292
Beaumont, A., F.E.S.	288	Gardner, Willoughby	242
Birch, Frank	19, 67, 279	Goss, Herbert, F.L.S.....	208, 241, 259
Bloomfield, Rev. E. N., M.A., F.E.S.....	87, 89, 150, 244, 260, 262, 288	Gower, Harry D.....	238, 240
Boyd, W. C.....	187, 194	Green, E. Ernest, F.E.S.	185
Bradley, Ralph C.	13, 87, 190	Griffith, Arthur F., M.A.....	41
Briggs, C. A., F.E.S.....	14	Grimshaw, Percy H., F.E.S.	252
Brown, Major R. H.	238	Hampson, Sir G. F., Bart., M.A., F.E.S....	197
Cameron, M., M.B., R.N.	261	Hanbury, F. J., F.L.S.	260
Champion, G. C., F.Z.S.....	12, 133, 134, 162, 202, 235, 236, 255, 286	Image, Selwyn, M.A., F.E.S.	62
Chapman, T. A., M.D., F.Z.S.....	2, 35, 75, 135, 228	Imms, A. D.....	159, 188
Chaster, G. W.	287	Jeffrey, W. R.	10
Chitty, Arthur J., M.A., F.E.S.	237, 238	Jenkinson, F., M.A.	188
Cockerell, Prof. T. D. A., C.M.Z.S.	157	Jennings, F. B., F.E.S.	43, 161, 361
Colthrup, C. W.	259	Jones, A. Hugh, F.E.S.	78, 281
Cottam, Arthur	41, 89, 239, 240	Kenrick, G. H., F.E.S.	239
Cruttwell, Rev. Canon, C. T., M.A.	1	Keys, J. H., F.E.S.	134
Day, F. H.	88, 261, 262	King, J. J. F. X., F.E.S. ...	135, 136, 181, 288
Distant, W. L., V.P.E.S.	82	Lathy, Percy T.....	29, 196
Douglas, J. W., F.E.S.....	11	Longstaff, G. B., M.D., J.P., L.C.C.	42
Durrant, J. Hartley, F.E.S.....	4, 60, 61, 179, 259	Luff, W. A.	43, 57, 237, 239
Eaton, Rev. A. E., M.A., F.E.S.	132, 160, 180	McLachlan, R., F.R.S. &c....	6, 14, 43, 44, 65, 88, 110, 114, 127, 149, 189, 209, 220, 222, 226, 241, 242, 244, 263, 264
		Malloch, J. R.	242, 264

	PAGE		PAGE
Mandy, W. H., B.A.	160	Sharp, D., M.A., M.D., F.R.S.	230, 251, 253, 289
Marshall, Guy A. K., F.E.S.	207	Sharp, W. E.	64, 131
Marshall, Rev. T. A., M.A., F.E.S.	112	Sladen, F. W. L.	239, 265
Mason, P. B., M.R.C.S., F.L.S.	243	Smith, E. J. Singleton	237
Merrifield, F., F.E.S.	186	Smith, W. W., F.E.S.	7, 160
Meyrick, E., B.A., F.Z.S.	257	Southby, F. F.	288
Morice, Rev. F. D., M.A., F.E.S.	40, 107, 129, 164, 203, 210	Strickland, T. A. Gerald, F.E.S.	190
Morley, Claude, F.E.S.	15, 42, 117, 174, 238, 244, 287, 288	Swinton, A. H., F.E.S.	239
Morton, Kenneth J., F.E.S.	108, 159	Thornley, Rev. A., M.A., F.L.S.	207
Needham, James G., Ph.D.	38	Tomlin, Brockton, F.E.S.	63
Nevinson, E. B., F.Z.S.	62	Turner, H. J., F.E.S.	19, 48, 68, 92, 138, 191, 247, 280, 291
Newstead, R., F.E.S.	160, 247	Urwick, W. F., F.E.S.	240
Osten Sacken, Baron C. R. v. d. Hon. F.E.S.	281	Verrall, G. H., P.E.S.	16
Partridge, Col. C. E.	238	Vice, W. Armston, F.E.S.	115
Perkins, R. C. L., B.A.	49, 172	Wainwright, C. J., F.E.S.	17, 48, 67, 91, 137, 191, 246, 279
Piffard, A.	190	Walker, Rev. F. A., D.D., F.L.S.	189
Porritt, G. T., F.L.S.	208, 209	Walker, J. J., R.N., F.L.S.	20, 21, 94, 115
Quail, Ambrose, F.E.S.	153	Walsingham, Rt. Hon. Lord, M.A., LL.D., F.R.S.	4, 59, 61, 80, 106, 127, 152, 176, 179, 193, 194, 212, 216
Richardson, Nelson M., B.A., F.E.S.	260	Wheeler, F. D., M.A., LL.D., F.E.S.	278
Rothney, G. A. J., F.L.S.	13	Williams, J. W., M.R.C.S., F.L.S.	241
Rowland-Brown, H., M.A., Sec.E.S.	94, 116, 139, 163, 215, 292	Wood, John H., M.B.	30, 69, 102
Ryles, William E., F.E.S.	263	Wood, Rev. Theodore, F.E.S.	115, 133, 237
Saunders, E., F.L.S.	14, 51, 83, 132, 134, 135, 204, 208, 227, 266	Yerbury, Col. J. W., R.A., F.Z.S.	53, 84, 199

GENERAL INDEX.

	PAGE
Acherontia Atropos in Notts	207
Aoidalia inornata, Unusual abundance of, at Huddersfield	208
Actocharis Readingi at Plymouth, Re-occurrence of	261
Aculeates, Scottish	265, 266, 288
Æschna cærulea in Ross-shire, 136; mixta, Latr., near Rye	288
Africa, Further notes on Lepidoptera from South	140
Agelastica alni, Linn., at Deal	161
Agrias Sardanapalus, Bates, On a new form of	29
Agrion hastulatum, Charp.: a new British Dragon-fly, 226; the exact locality for the Aviemore example	263
Alderney Coleoptera, List of, 57; Dragon-flies in, including Lestes barbara, Fab., 189; Sympetrum flaveolum, An unusual variety of, from	209
Amnosia, Westw., On the species of	196
Anchomenus quadripunctatus, De Geer, confirmed as British, 202; Supplementary note on the distribution of	236
Andrena lapponica, Zett., in Cumberland, 88; Scotland	243
Anopheles maculipennis, Mg., Synonymy of	281
Anthomyid, A new British	252
Ants: large colonies in New Zealand	7

<i>Aporia cratægi</i> : experiments on the colour susceptibility of the pupating larva, and on the edibility of its larva by birds	186
<i>Argynnis Niobe</i> , var. <i>Eris</i> , taken in England	41, 89
<i>Aristotelia</i> : a new species bred from <i>Hypericum</i>	80
<i>Astata stigma</i> , Pz., in North Wales	242
<i>Bacotia sepium</i> , Spr., in the New Forest, with notes on its characters	2
<i>Batodes angustiorana</i> , Haw., feeding on grape pulp	9
<i>Bembidium varium</i> , Oliv., in Cumberland	262
<i>Berea articularis</i> , Pict.: an addition to the British Trichoptera, with further notes on <i>Plectrocnemia brevis</i> , McLach.	180
<i>Bertkauia prisca</i> , Kolbe: a genus and species of Psocidæ new to Britain	220
<i>Blacus armatulus</i> , Ruthe: a Braconid new to Britain	288
<i>Blastobasis ægnella</i> , Z.: a European species wrongly included in the American lists, and <i>Opogona dimidiatella</i> , Z., a Javan species inserted without justification in Staudinger's Catalog	179
Breck, A quarter of an hour on the	288
Butterflies in the Austrian Tyrol in July...	271
<i>Callicera senea</i> , F., in Lincolnshire	207
<i>Carabus auratus</i> , L., near Exmouth	133
<i>Carcinops 14-striata</i> , Steph., in a London bakehouse	43
<i>Cardiophorus equiseti</i> , Herbst, in Glamorganshire	63
<i>Catabomba pyrastri</i> bred from Lepidopterous pupæ	244
<i>Catharia pyrenæalis</i> , Dup., Life-history of	75
<i>Ceuthorrhynchidius mixtus</i> , M. and R., in Britain	287
Chesham district, Coleoptera in	236
<i>Chilomenes (Coccinella) lunata</i> , F., at Bristol	115
<i>Chærocampa nerii</i> , <i>Acherontia Atropos</i> , and <i>Sphinx convolvuli</i> near Weymouth	260
<i>Chortophila buccata</i> parasitic on <i>Andrena labialis</i> , 190; on <i>Andrena</i> ?	243
Chryside, A revised Synoptic Table of British, 129; <i>Ellampus truncatus</i> : an addition to the list of British	107
<i>Chrysomphalus dictyospermi</i> : a scale insect from Cannes	157
Coccidæ, Observations on (No. 18)	247
<i>Coleophora (stefanii, de Joannis)</i> , A gall-making...	59
Coleoptera and Hemiptera in the New Forest, 262; of the Deal Sandhills	94
Coleoptera at Chesham, 11; Crickhowell, South Wales, 237; Rannoch, 21; Richmond, 12; Southport, 287; from Iceland, and the Farø Islands, collected by N. Annandale, Esq., in 1900, 253; in the Chesham district, 236; of Alderney, List of, 57; the Liverpool district, and in Denbighshire in 1899	64
<i>Colias Edusa</i> and <i>Hyale</i> in Surrey	208
<i>Colias Edusa</i> at Totnes, 239; great flight in the West of Ireland, 1; in Ireland, 28; Shropshire, 237; South Devon	160
<i>Colias Hyale</i> , L., <i>Edusa</i> , F., and other <i>Rhopalocera</i> in East Kent, 238; in Dorsetshire, Hampshire, and Surrey, 1900, 259; Hertfordshire, 239; Kent and South Essex, 238; Shropshire, 239; Somersetshire, 239; Suffolk, 238; various localities, 259; near Croydon, 238; Dover, 239; and other Lepidoptera at Greenhithe, 250; <i>Papilio Machaon</i> , and <i>Lampides botica</i> in Guernsey	239
<i>Collembola</i> , "Förnrohr's Naturhistorische Topographie, von Regensburg"	244

	PAGE
<i>Comptoschilus palpalis</i> , Er., &c., at Woking	162
<i>Coreus denticulatus</i> , Scop., at Lincoln	262
<i>Cordulegaster annulatus</i> , Latr., in North-West London	241
Corsica and France, new Micro-Lepidoptera from, 216; Diptera, List of some Corsican	112
<i>Crabro carbonarius</i> , Dahlb.: an addition to the British list, 227; <i>quinquesignatus</i> , Jurine, carrying off ants in Corsica, 264; <i>signatus</i> in the New Forest	264
<i>Crambus hortuellus</i> , common in Holborn, London	62
Deal Sandhills, Coleoptera and Hemiptera of	94
<i>Deilephila livornica</i> at St. Austell, 160; near Croydon	240
Devon, Trichoptera from	264
<i>Dinarda dentata</i> : a reminiscence	11
<i>Diplodoma marginepunctella</i> , Steph., in Dumbartonshire, 132; Scotland	188
Diptera in Scotland during the years 1898—99, 51, 84; the Midlands, Rare, 1899, 87; List of some Corsican, 112; taken in the New Forest, 1899	14
Dragon-flies, How to rear nymphs of, 38; in Alderney, 189; Inverness-shire and Sutherlandshire, 241; Scotland, Some old records of	108
<i>Drosophila maculata</i> , Dufs.: a new British Dipteran, 251; the generic position of	289
<i>Elasmostethus ferrugatus</i> , F., in Wales	131
<i>Ellampus truncatus</i> , Dahlb.: an addition to the list of British Chrysids	107
<i>Emus hirtus</i> in Alderney	237
<i>Enallagma cyathigerum</i> , Chp., ♂, An extraordinary melanic variety or aberration of	110
Entomology of the new Victoria History of the Counties of England	267
<i>Eriocampa limacina</i> , A special structure in the larva of	228
<i>Eriocrania</i> from England, A new	106
Evolution Committee of the Royal Society, Memorandum from	139
Excursion to Egypt, Palestine, Asia Minor, &c., in search of Aculeate Hymenoptera	164
Fruit damaged by moths in S. Africa	207
Fürnrohr's "Naturhistorische Topographie von Regensburg": a hint to students of Collembola	244
Gloucestershire, Neuroptera in	263
<i>Goniodoma</i> , L., Larval habits of the species	158
<i>Halesus guttatipennis</i> , McLach., in Wilts, 288; and <i>Ecolisopteryx guttulate</i> , Pict., in Gloucestershire	263
<i>Halobates</i> in the Indian Ocean	115
<i>Harpalus serripes</i> , Schönh., inland	133
Hawaiian Lepidoptera, New	257
<i>Helcon annulicornis</i> , Nees, confirmed as British	174
<i>Heliothis armigera</i> , bred at Tavistock, 288; <i>scutosa</i> , Schiff., in South Devon	260
<i>Hemerobius limbatellus</i> in Surrey	14
<i>Hemianax ephippiger</i> , Burm., at Brindisi	114
Hemiptera at Harting, Sussex, 14; Note on the attractive properties of certain larval, 185, of the Deal Sandhills	101
<i>Heriades truncorum</i> , L., Re-occurrence of, in England	203
Hermaphrodite <i>Argynnis Paphia</i> -Valezina, 240; specimen of <i>Lycæna Adonis</i>	208

Homalota puberula, Sharp, and other Coleoptera at Chesham, 11; vicina, Steph., A bituberculate form of	134, 162
Hydradephaga and Hydrophilidæ taken during the present season	190
Hydrilla palustris, British localities for	115
Hydrothassa hannoverana, F., in Cumberland	262
Hymenoptera, Aculeata, An excursion to Egypt, Palestine, Asia Minor, &c., in search of, 164; at Birmingham, &c., Stoborough Heath, Wareham, Dorset, 13; Harting, Sussex, 14; in North Wales, 62; near Cobham (Surrey), 210; on the coast of Kent, 265; Scottish Aculeate, additions to the list, 265; in Scotland, Aculeate, 266, 288; Parasitic, &c., near Ipswich in October, 42; Three little known British Aculeate, Pompilus approximatus, Gm., Osmia parietina, Curt., and O. inermis, Zett.	51
Hyperetes guestfalicus, Kolbe, at Dover	88
Iceland and the Faroë Islands, Coleoptera from	253
Iohneumon solictorius and Scolopates varipes in New Zealand, Habits of	160
Italian Lakes, Lepidoptera of	78
Kent, Aculeate Hymenoptera on the coast of	265
Lampides bætica bred in Guernsey	240
Laphria flava, L., in Inverness-shire, Scotland	87
Larva of Eriocampa limacina, A special structure in	228
Larval Hemiptera, Note on the attractive properties of certain	185
Lepidoptera at Lowestoft, 188; Rannoch, 21; Further notes on South African, 140; in North Devon, 1899, 42; New Hawaiian, 257; of the Italian lakes in October, 78; "Schill" Collection, 240; Teratological specimens of	197
Lestes barbara, Fab., in Alderney	189
Leucorrhinia dubia, v. d. L., Probable migration of	189
Libellula fulva, Müll., The old British localities for, 65; quadrimaculata, Migrations of, in Belgium	222
Lithocolletis concomitella, Banks, and its nearest allies, On the larvæ, habits, and structure of, 80, 69, 102; pyrivorella, Bnks., Supplementary notes on	125
Liverpool district, Coleoptera in the	64
Loxocera, Notes on	116
Lycæna Adonis, Hermaphrodite specimens of, 208; bellargus (Adonis) in Hertfordshire, 240; argiolus in South London	159
Machilis maritima, Leach, Notes on the habits of	188
Mantissa, A remarkable new mimetic species of	127
Massachusetts Agricultural College, Course of Entomology at...	283
Meade's Collections, The late Mr. R. H.	136
Mending broken insects	190
Metzneria littorella, Dgl., Description of the larva of	127
Micro-Lepidoptera, New Corsican and French, 152, 216; Revision of the Nomenclature of	4
Midlands, Rare Diptera, 1899	87
Migration in Leucorrhinia dubia, v. d. L., Probable case of	189
Migrations of Libellula quadrimaculata in Belgium	222
Mimetic resemblance between Paragus bicolor, F., a Dipteron, and Prosopis variegata, F., an Aculeate Hymenopterous	83
Mutilla europæa and Polistes gallica, L.	135, 160

	PAGE
<i>Nabis brevis</i> , Scholtz : an addition to the British Hemiptera ...	227
Neuroptera collected in the upper portion of Strathglass in 1899 ...	181
New Forest, Coleoptera and Hemiptera in the, 262 ; <i>Crabro signatus</i> in, 264 ; Local and rare Diptera in, 1899 ...	14
<i>Nomada atrata</i> , Sm., = <i>brevicornis</i> , Schmied., re-admitted into the British list ...	204
<i>Nonagria brevilinea</i> , Fenn, On the distribution of ...	278
<i>Norellia</i> , Notes on the British species of the genus ...	199
Norfolk, <i>Rhaphidia cognata</i> in ...	263
North Devon, Lepidoptera in, 1899 ...	42
<i>Nysia zonaria</i> in the Hebrides, 41 ; Re-discovery of ...	9
OBITUARIES : Blanchard, Prof. Emile, 67 ; Blatch, William Gabriel, F.E.S., 89 ; Bridgman, John Brooks, F.L.S. (supplementary), 15 ; Gill, Dr. Walter Battershell, M.D., &c., 66 ; Hofmann, Dr. Ottmar, 90, 212 ; Meade, Richard Henry, F.R.C.S., 46 ; Mik, Josef, 289 ; Spence, William Blundell, F.E.S., 66 ; Staudinger, Dr. Otto, 267 ; Ward, Christopher, F.L.S., 213 ; Wulp, Frederik Mauritz van der ...	16
Odonata of East Sussex, 150, 262, 288 ; Aberdeenshire... ..	263
<i>Odynerus tomentosus</i> , Thoms. : a species new to Britain, and some remarks on the Walcott Collection of Aculeate Hymenoptera ...	172
<i>Orochares angustatus</i> , Er. : a genus and species new to Britain ...	286
Oviposition of <i>Ranatra linearis</i> ...	161
<i>Oxygastra curtisii</i> , A locality for ...	241
<i>Oxyptoda longipes</i> , Muls., in Morayshire ..	237
<i>Pachyta sexmaculata</i> , Linn., &c., at Nethy Bridge, Inverness-shire, &c.	235, 286
Paget, The late Sir James, and his brother as Naturalists ...	89
<i>Papilio Machaon</i> at Hythe, Kent ..	160
<i>Peribalus vernalis</i> , Wolff, in Slindon Woods, Sussex ...	132
<i>Pezomachus</i> , Note on ..	147
<i>Phalonia sabulicola</i> , Wlsm., n. sp., = <i>Conchylis erigerana</i> , Wlsm. ...	194
<i>Philanthus triangulum</i> , F., in Kent ...	63
<i>Philonthus punctus</i> , Grav., &c., at Gravesend ...	262
<i>Phthoroblastis juliana</i> , Crt., of Staudinger's Catalog ...	193
<i>Phytosus spinifer</i> at Scarborough ...	11
<i>Pipunculus incognitus</i> : a correction ...	190
<i>Plectrocnemia brevis</i> , McLach. : an addition to the British Trichoptera ...	149
<i>Plusia moneta</i> at Waltham Cross ...	187
<i>Pompilus</i> (<i>Weesmaelinus</i>) <i>sanguinolentus</i> , F. : an addition to the British list..	206
<i>Prosopis palustris</i> , sp. nov. : an addition to the British Hymenoptera ...	49
<i>Proutia salicolella</i> (auct.) = <i>anicanella</i> , Bruand ..	35
<i>Pseotra diptera</i> in Ireland ...	288
<i>Psocid</i> , A striking instance of neural variation in a ...	14
<i>Psocidæ</i> , <i>Bertkauia prisca</i> , Kolb. : a genus and species new to Britain, 220 ; Notes on the brachypterous conditions in females, 6 ; on the wing, a query ..	43
<i>Psocus</i> : two species allied to <i>Ps. bifasciatus</i> likely to occur in Britain ...	242
<i>Psyche villosella</i> , Notes on ...	194
Psychodidæ in England, Scotland, and Ireland, A few localities for ...	135

	vii. PAGE
<i>Pyrochroa serraticornis</i> , Scop., in numbers in a conservatory	134
<i>Ranatra linearis</i> , On the oviposition of	161
Rannoch, Coleoptera and Lepidoptera at	21
<i>Retinia sylvestrana</i> and <i>Stathmopoda pedalla</i> at Guestling	260
REVIEWS:— "Report of the Government Entomologist (Cape of Good Hope) for the year 1898," 15; "General Index to Miss Ormerod's Reports:" by Robert Newstead, F.E.S., 15; "British Dragonflies (Odonata):" by W. J. Lucas, B.A., F.E.S., 44; "The Hymenoptera of Suffolk, Part I, Aculeata:" by Claude Morley, F.E.S., 45; "Practical Hints on the formation of a collection of Coleoptera:" by J. J. Walker, R.N., F.L.S., 46; "A Monograph of the Coleopterous Families Corylophidæ and Sphæridæ:" by the late Rev. A. Matthews, edited by P. B. Mason, 65; "Proceedings of the Eleventh Annual Meeting of the Association of Economic Entomologists," 66; "Collembola and Thysanura of the Edinburgh District:" by George H. Carpenter, B.Sc., F.E.S., and William Evans, F.R.S.E., 91; "The Insects of Alderney:" by W. A. Luff, 162; "Proceedings of the South London Entomological, &c., Society for 1899," 210; "A list of the Coleoptera of the Rochester District:" by J. J. Walker, R.N., F.L.S., 211; "The Injurious Scale Insects and Mealy Bugs of the British Isles:" by R. Newstead, F.E.S., 245; "Trichopterygia illustrata et descripta: a Monograph of the Trichopterygia, Supplement:" by the late Rev. A. Matthews, edited by P. B. Mason, 246; "Catalogue of Eastern and Australian Lepidoptera-Heterocera in the Collection of the Oxford University Museum, Part II, Noctuidæ, Geometridæ, and Pyralidina:" by Col. C. Swinhoe, F.L.S. (Pterophoridae and Tineina by the Rt. Hon. Lord Walsingham, M.A., LL.D., and John Hartley Durrant, F.E.S.), 267; "Geological Antiquity of Insects," 2nd edition: by H. Goss, F.L.S., F.G.S.	
<i>Rhaphidia cognata</i> : a recent British example	289
<i>Rhinocypha fulgidipennis</i> , Guér., Note concerning	263
<i>Rhynchota</i> , Undescribed African	114
<i>Rhynchota</i> , Undescribed African	82
<i>Rumia cratægata</i> , Protective resemblance in	159
<i>Scaptocoris</i> , Perty, A species of, found at the roots of sugar cane	255
"Schill" Collection of Lepidoptera	240
Scotland, Aculeate Hymenoptera in, 265, 266, 288; <i>Adela cuprella</i> in, 153; <i>Æschna cærulea</i> in, 136; <i>Agrion puella</i> in, 88; <i>Andrena lapponica</i> in, 243; Coleoptera in, 21; <i>Crabro carbonarius</i> in, 227; <i>Diplodoma marginepunctella</i> in, 132, 188; Diptera in, 51, 84; <i>Laphria flava</i> in, 87; Lepidoptera in, 21; <i>Nepa cinerea</i> in, 188; Neuroptera in, 88, 108, 136, 181, 241, 263; <i>Pachyta sexmaculata</i> , &c., in, 235; <i>Sirex gigas</i> in, 243; <i>Vespa austriaca</i> in, 243, 264; <i>Xenolechia æthiops</i> in	159
Scudder's "Nomenclator Zoologicus," A proposed supplement to	136
<i>Sesia bombyliformis</i> , Notes on the earlier stages of	10
<i>Sirex gigas</i> in Dumbartonshire	243
SOCIETIES:— Birmingham Entomological Society, 17, 47, 67, 91, 136, 191, 246, 268; Entomological Society of London, 20, 68, 92, 116, 138, 163, 214, 291; Lancashire and Cheshire Entomological Society, 19, 67, 192, 269; South London Entomological, &c., Society	
	17, 48, 67, 91, 137, 192, 246, 247, 270, 289

	PAGE
<i>Sphegophaga vesparum</i> , Curt.	117, 185
Spring butterflies in Dorset and Devon	182
Staudinger's Catalogue, The forthcoming New Edition of	61
<i>Stauropus fagi</i> , Notes on rearing	275
<i>Stenophylax alpestris</i> , &c., at Huddersfield	209
<i>Stenus opticus</i> , Grav., &c., at Plymouth	134
<i>Stilbum splendidum</i> , F., v. <i>amethystinum</i> , Fr., in England	243
<i>Stilpnotia salicis</i> on Hackney Marsh	62
<i>Stylops melittæ</i> , Kby., at Woking	134
Sugar cane ; borer moth, 158 ; Species of <i>Scaptocoris</i> found at the roots of	255
Supplementary Catalogue of the Library of the Entomological Society of London	245
Sussex, Odonata of East	262, 288
<i>Sympetrum flaveolum</i> , An unusual variety of, from Alderney, 209 ; <i>Fonscolombii</i> , Selys, in Alderney	43
Tachinidæ on oak trunks	244
<i>Tapinostola Bondii</i> , Knaggs, in the North of France	61
<i>Tenthredopsis Thornleyi</i> , Konow : a new sawfly (British)	40
Teratological specimens of Lepidoptera	197
<i>Teratopsocus maculipennis</i> , Reut.	6
<i>Thaumtoneura inopinata</i> , McLach., The habitat of	189
<i>Throscus dermestoides</i> , L., variation of	12
<i>Tinea</i> (Meesasia) <i>vinculella</i> , H.-S., and its European allies, with descriptions of new species	176
<i>Tortrix</i> : a new species reported from Shetland ..	60
Trichoptera from the vicinity of Seaton, S. Devon	264
<i>Trigonogenius globulum</i> , Sol., in Lancashire	63
<i>Trogophloeus</i> , Some undescribed species of, with a new genus	230
<i>Typhlocyba</i> , Two new British species of	279
<i>Vanessa Antiopa</i> at Huntingdon, 238 ; Merton, Norfolk, 259 ; in Suffolk, 237 ; near Crawley, 238 ; <i>gonerilla</i> , Fab., of New Zealand, Life-history of	153
<i>Vespa austriaca</i> , Pz., in Scotland	243, 288
Wales, Aculeate Hymenoptera in North	62
<i>Xenolechia æthiops</i> , Westw., in Scotland, 159 ; in Scotland in April, 132 ; and <i>Adela cuprella</i> , Thnb., in Scotland	159
<i>Zabrus gibbus</i> in the Lea Valley	261
<i>Zelleria phyllirella</i> , Mill., in Ireland	4

SPECIAL INDEX.

COLEOPTERA.

	PAGE		PAGE
<i>Acanthocinus ædilis</i>	23	<i>Conipora orbiculata</i>	237
<i>Actocharis Readingi</i>	261	<i>Creophilus maxillosus</i> , v. <i>ciliaris</i>	99
<i>Adrastus pusillus</i>	98	<i>Cryptocephalus vittatus</i>	57
<i>Aëpus marinus</i> , <i>Robinii</i>	261	<i>Diglotta sinuaticollis</i>	64
<i>Agabus femoralis</i>	191	<i>Dinarda dentata</i>	11
<i>Agaricophagus cephalotes</i>	12	<i>Donacia sparganii</i> , &c.	100
<i>Agathidium globosum</i>	12	<i>Dorytomus costirostris</i>	22
<i>Agelastica alni</i>	161	<i>Dyschirius extensus</i>	97
<i>Agrilus laticornis</i>	262	<i>Dytiscus circumcinctus</i> , <i>circumflexus</i>	100
<i>Aleochara ruficornis</i>	64	<i>Elmis Volkmar</i>	237
<i>Amara curta</i> , <i>patricia</i> , <i>rufocincta</i> , <i>spretæ</i> ..	95	<i>Emus hirtus</i>	237
<i>Anchomenus quadripunctatus</i>	202, 236	<i>Enochrus bicolor</i> ..	100, 191
<i>Anisotoma furva</i> , 98; <i>ovalis</i> , 12; <i>pallens</i> ..	98	<i>Epuræa silacea</i>	23
<i>Anommatus 12-striatus</i>	12	<i>Erirrhinus æthiops</i>	235
<i>Antherophagus silaceus</i>	287	<i>Ernobius nigrinus</i>	23
<i>Anthicus bimaculatus</i>	98, 287	<i>Eros aurora</i>	235
<i>Anthrenomus comari</i>	22	<i>Euconnus denticornis</i>	162
<i>Apion flavimanum</i> , 12; <i>sedi</i>	96	<i>Euthia plicata</i> , <i>scydmænoides</i>	12
<i>Athous undulatus</i>	24	<i>Gymnetron melanarius</i> , 12; <i>villosulus</i> ...	64
<i>Bagous limosus</i>	236	<i>Gyrinus Suffriani</i>	100
<i>Bembidium islandicum</i> (sp. n.), Sharp, 254; <i>nigricorne</i> , 254; <i>varium</i>	262	<i>Gyrophæna lucidula</i> , 236; <i>Poweri</i>	12
<i>Berosus spinosus</i>	191	<i>Harpalus anxius</i> , 95, 239; <i>consentaneus</i> , 162; <i>cordatus</i> , <i>melancholicus</i> , 95; <i>serripes</i>	133
<i>Bidessus unistriatus</i>	191	<i>Helops cœruleus</i>	262
<i>Blediotrogus guttiger</i> (sp. n.), Sharp	234	<i>Heterothops quadripunctula</i>	236
<i>Bledius crassicornis</i>	97	<i>Homalium pineti</i>	23
<i>Bruchus canus</i>	12	<i>Homalota fallax</i> , 236; <i>orphana</i> , <i>peregrina</i> , <i>planifrons</i> , <i>pruinosa</i> , <i>puberula</i> , &c., 11; <i>vicina</i> , var.	134, 162
<i>Callicerus rigidicornis</i>	236	<i>Hydnobius punctatissimus</i>	287
<i>Calodera riparia</i>	236	<i>Hydrocyphon deflexicollis</i> ..	22, 237
<i>Carabus arvensis</i> , 162, 236; <i>auratus</i> , 133; <i>glabratus</i>	25, 235	<i>Hydroporus neglectus</i> , 191; <i>septentrio-</i> <i>nalis</i>	237
<i>Carcinops 14-striata</i>	43	<i>Hydrothassa hannoverana</i>	262
<i>Cardiophorus equiseti</i>	63	<i>Hypera fasciculata</i>	65, 96
<i>Carida flexuosa</i>	24	<i>Ilyobates nigricollis</i>	236
<i>Cassida hemisphærica</i> , 98; <i>murræa</i>	100	<i>Lathridius testaceus</i>	237
<i>Cetonia floricola</i>	24	<i>Limnobaris T-album</i>	235
<i>Ceuthorhyndchidius mixtus</i>	287	<i>Limobius mixtus</i>	96
<i>Ceuthorrhynchus euphorbiæ</i> , 12; <i>geo-</i> <i>graphicus</i> , 96; <i>hirtulus</i> , 96; <i>mixtus</i> , 287; <i>pilosellus</i> , 98; <i>reseda</i>	96	<i>Lixus bicolor</i>	96
<i>Chilomenes lunata</i>	115	<i>Magdalis phlegmatica</i>	23
<i>Cis Jacquemarti</i> , 24; <i>punctulatus</i>	23	<i>Mantura chrysanthemi</i>	287
<i>Compsochilus palpalis</i>	162	<i>Masoreus Wetterhali</i>	96
		<i>Medon castaneus</i> , 98; <i>obsoletus</i>	12

	PAGE
Melanotus punctolineatus	96, 162
Meligethes bidens	12
Melœ brevicollis	57
Miarus graminis, plantarum	236
Micalymma brevipenne	261
Mycetophagus piceus	12
Myllæna Kraatzii	237
Nanophyes gracilis	262
Necrophorus germanicus	57
Notiophilus rufipes	12
Nudobius lentus	23
Olibrus flavicornis	12
Oligota apicata	12
Orocharis angustatus	286
Oxyptoda edinensis, 237; longipes	24, 237
Pachyta sexmaculata	235, 287
Panagæus quadripustulatus	96
Philonthus lepidus, 96; prolixus, 237; punctus	262
Philopodon geminatus	162
Phyllobrotica quadrimaculata	162
Phytosus nigriventris, 64; spinifer	11
Platycis minutus	12
Platyderus ruficollis	12
Poophagus nasturtii	236
Psammobius sulcicollis	63
Pseudopsis sulcata	287
Psyllodes picina	43
Pterostichus æthiops	25
Pytho depressus	23
Quedionuchus lævigatus	22
Quedius xanthopus	22
Rhinoncus bruchoides	64
Rhizophagus dispar, 23, 237; nitidulus ..	23
Rhizotrogus æstivus	57
Saperda scalaris	235
Scopeus sulcicollis	12
Scymnus ater	96
Sipalia testacea	261
Staphylinus latebriicola, 235; stercorarius	25
Stenolophus teutonius	12
Stenus carbonarius, 236; opticus	134
Strangalia nigra, 162; quadrifasciata ..	235
Stylops melitte	134
Tachinus elongatus, 235; flavipes, pallipes, proximus	25
Telmatophilus sparganii	100
Throscus dermestoides	12
Trechus rubens	25, 162
Trichius fasciatus	24

	PAGE
Trigonogenius globulum	64
Trogophleus anglicanus (sp. n.), Sharp, 232, 261; coloratus (sp. n.), Sharp, 281; halophilus, 97, 261; unicolor (sp. n.), Sharp, 232; zealandicus (sp. n.), Sharp	233
Trypodendron lineatum	23
Velleius dilatatus	262
Xyleborus dryographus	162
Zabrus gibbus	261

DIPTERA.

Alophora hemiptera	15
Amaurosoma fasciatum	14
Anopheles maculipennis	281
Anthrax flava, fenestrata	14
Blepharoptera inscripta	88
Callicera ænea	14, 287
Calobata stylifera	87
Catabomba pyrastris	244
Cephenomyia rufibarbis	56
Ceroplatus sesoioides	14
Chilosia soror	88
Chortophila buccata	190, 243
Conops ceriiformis	88
Cordylura rufimana	84
Corsican Diptera, List of	112
Criorrhina fallax	52
Cynomyia alpina	55
Dioctria Reinhardi	14
Drosophila maculata	251, 289
Dryomyza flaveola, Zawadskii	202
Hydromyza livens	88
Hyetodesia aculeipes	252
Laphria flava	53, 87
Leucophenga maculata	251, 289
Limnia lineata	86
Loxocera albiseta, aristata, sylvatica	115
Mallota eristoloides	14
Miltogramma conica	88
Nemoræa appendiculata, 87; notabilis ..	88
Neottiophilum præustum	14, 88
Norellia flavicauda, liturata, nervosa, spini- gera, spinimana	201
Ecotoea fenestralis	88
Edoparea buccata	86
Orthoneura nobilis	87
Paragus bicolor, 83; tibialis	87

	PAGE
Pipunculus campestris, fuscipes, incognitus, 88; sylvaticus	14, 88
Plagia curvinervis	88
Pogonota hircus	86
Psychodidæ	135
Spathiophora hydromyzina	85
Sphegina clunipes	14
Syrphus annulipes, 54; guttatus	88
Tephritis bardanae	14
Tipula scurra	87
Trichopalpus punctipes	86
Trichophthicus semipellucidus	14
Xylota abiens, confinis, florum	56

HEMIPTERA.

Acoloba malleata (sp. n.), Distant	82
Bathysolen nubilus	101
Calyptonotus lynceus	101
Ceraleptus lividus	101
Chorosoma Schillingi	101
Chrysomphalus dictyospermi	167
Coranus subapterus	101, 263, 288
Coreus denticulatus	262
Corizus crassicornis, 101; maculatus, 14; parumpunctatus	101
Cymus melanocephalus	14
Dactylopius formicarius (sp. n.), Newst., 249; glacialis (sp. n.), Newst.	248
Elasmotethus ferrugatus	131
Emblethis verbasci	101
Eurygaster nigra	101
Henestaris laticeps	101
Ilerda sudana (sp. n.), Distant	82
Iliplia natalicola (sp. n.), Distont	82
Jalla dumosa	101
Lygæus equestris	101
Nabis brevis	227
Neides parallelus	101
Nepa cinerea	188
Odontoscelis fuliginosus	101
Peribalus vernalis	132
Perissopneumon ferox (g. et sp. n.), Newst.	50
Pionosomus varius	101
Plociomorus fracticollis	14
Prostemma guttula	101
Pseudophlæus Falleni	101
Ranatra linearis	161
Ripersia montana, Wasmanni (sp. n.), Newst.	249

	PAGE
Scaptocoris talpa (sp. n.), Champ.	256
Sciocoris cursitans	101
Strachia festiva, oleracea	101
Teratocoris Saundersi	101
Typhlocyba candidula, 279; cruentata ...	280

HYMENOPTERA.

Agathis malvacearum	288
Agenia variegata	62, 265
Ammoplanus Kohlii	171
Andrena Cetii, Hattorfiana, 265; labialis, 190; lapponica, 88, 243, 266; nigriceps, 63, 266; similima	265
Astata stigma	62, 242, 265
Blacus armatulus	288
Bombus lapponicus	266, 267
Ceratina bispinosa, mandibularis, parvula ..	169
Cerceris quadricincta	265
Chrysidæ, British	129
Chrysis electa, 168; Kohlii, 169; osiris ..	170
Cilissa melanura	265
Cœlioxys farinosa	168
Crabro carbonarius, 227; gonager, 210; interruptus, 13; pubescens, 210; quinquesignatus, 264; scutellatus ...	210
Ellampus truncatus	107
Eremiasphecium Schmiedeknechtii	167
Eriades fasciatus	170
Eriocampa limacina	228
Eucera cœrulescens	171
Exoneura libanensis	171
Halictus atricornis, lævigatus	13
Heriades truncorum	203
Ichneumon solicatorius	160
Lissonota sulphuripes	42
Masaris vespiformis	166
Megachile mucorea, 168; versicolor	63
Melliturga præstans	170
Methoca ichneumonides	210
Mutilla europæa	135, 160
Nectanebus Fischéri	166
Nomada atrata, 204; Lathburiana, 13; obtusifrons, 266; Roberjeotiana	63
Notozus Panzeri	210
Odynerus gracilis, 62, 210; tomentosus ...	172
Osmia inermis, 51, 266; ligulicornis, 170; mirabilis, 168; parietina	51, 63
Oxybelus mandibularis, mucronatus	62
Paracœlioxys rufiventris	168
Paradiorys pannonica	170

	PAGE
<i>Passalæcus monilicornis</i>	266, 289
<i>Pemphredon morio</i>	13, 210
<i>Pezomachus</i>	147
<i>Philanthus triangulum</i>	63
<i>Pimpla graminellæ</i>	43
<i>Polistes gallica</i>	135, 160
<i>Pompilus approximatus</i> , 51; <i>minutulus</i> , 265; <i>sanguinolentus</i> , 206; <i>unicolor</i> ..	265
<i>Prosopis Masoni</i> , 265; <i>palustris</i> , 40; <i>variegata</i>	83
<i>Salix affinis</i> , <i>notatulus</i> , 13; <i>parvulus</i> ...	219
<i>Scolobates varius</i>	160
<i>Sirex gigas</i>	242
<i>Sphecodes ferruginatus</i> , 266; <i>hyalinatus</i> , 62, 265	
<i>Sphegophaga vesparum</i>	117, 135
<i>Stilbum splendidum</i> , v. <i>amethystinum</i> ...	243
<i>Tenthredopsis Thornleyi</i>	40
<i>Vespa austriaca</i>	62, 243, 264, 288

LEPIDOPTERA.

<i>Abraxas grossulariata</i>	198
<i>Achea Lienardi</i>	142, 207
<i>Acherontia Atropos</i>	141, 207, 260, 261
<i>Acidalia inornata</i>	208
<i>Adela cuprella</i>	159
<i>Agrias Sardanapalus</i> , ab. nov., <i>Hades</i> , <i>Lathy</i>	29
<i>Agrotis cuprea</i> , 275; <i>eremoides</i> , 257; <i>procellaris</i>	258
<i>Amphidasys betularis</i>	207
<i>Anarta melanopa</i>	41
<i>Apiletria acutipennis</i>	145
<i>Apatema mediopallidum</i> (g. et sp. n.), Wlsm.	220
<i>Aporia cratægi</i>	186
<i>Argynnis Aglaia</i> , 26, 274; <i>amathusia</i> , 274; <i>Niobe</i> , 41, 89, 274; <i>Paphia</i> , 240, 274; <i>Thore</i>	272, 274
<i>Aristotelia morphochroma</i>	80
<i>Bacotia sepium</i>	2, 38
<i>Batodes angustiorana</i>	9
<i>Blastobasis segnella</i>	179
<i>Boarmia abietaria</i> , <i>glabraria</i> , <i>repandata</i> ...	198
<i>Callimorpha Hera</i>	275
<i>Campptogramma fluviata</i>	259
<i>Carsia imbutata</i>	28
<i>Catharia pyrenæalis</i>	75
<i>Catocala nupta</i> , 198; <i>puerpera</i>	275
<i>Caunaca insulella</i> (sp. n.), Wlsm.	153
<i>Chærocampa Æson</i> , 140; <i>nerii</i>	260, 275
<i>Chaleosia venosa</i>	198

	PAGE
<i>Coleophora Fabriciella</i> , <i>spissicornis</i> , 4; <i>Stefanii</i>	59
<i>Colias Edusa</i> , 1, 28, 160, 208, 238, 239, 259, 274; <i>Hyala</i> , 208, 238, 239, 259, 274; <i>Palæno</i> , <i>Phicomone</i>	274
<i>Conchylis erigerana</i>	194
<i>Crambus furcatellus</i> , 41; <i>hortuellus</i>	62
<i>Cynria barbata</i> (g. et sp. n.), Wlsm.	219
<i>Deilephila capensis</i> , 141; <i>livornica</i> , 160, 240; <i>Schencki</i>	140
<i>Diacrisia rubida</i>	197
<i>Diatræa saccharalis</i>	158
<i>Diplodoma marginepunctella</i>	132, 188
<i>Ditrachyptera verruciferella</i>	145
<i>Ectropa ancillis</i>	145
<i>Endromis versicolor</i>	27
<i>Epiplema albida</i>	145
<i>Erebia æthiops</i> , 26, 275; <i>Epiphron</i> , 26, 274; <i>Gorge</i> , <i>Lappona</i> , <i>ligea</i> , 275; 275; <i>Manto</i> , 272, 275; <i>Melampus</i> , 272, 274; <i>Nerine</i> , 274; <i>Orme</i> , 271, 275; <i>Pharte</i> , 271, 274; <i>Pronœ</i> , 275; <i>Tyndarus</i>	275
<i>Eretmocera lætissima</i> , <i>moribunda</i> , <i>scatophila</i>	146
<i>Eriocrania fimbriata</i> (sp. n.), Wlsm.	106
<i>Eutricha pithyocampa</i>	144
<i>Fidonia pinetaria</i>	27
<i>Gelechia apoletella</i> (sp. n.), Wlsm., 216; <i>lyciella</i> (sp. n.), Wlsm., <i>micradelpha</i> (sp. n.), Wlsm., <i>ocymoidella</i> (sp. n.), Wlsm.	217
<i>Goniograma auroguttella</i> , <i>limoniella</i> , <i>Mil-lieriella</i>	158
<i>Gonometa postica</i>	143
<i>Gynanisa maia</i>	143
<i>Heliothis armigera</i> , 288; <i>scutosa</i>	260
<i>Hydrilla palustris</i>	116
<i>Ischnoscia carbonifera</i> (sp. n.), Wlsm.	152
<i>Larentia ruficinctata</i>	27
<i>Leucophasia sinapis</i>	274
<i>Limenitis Camilla</i>	274
<i>Lithocolletis Blancardella</i> , 69; <i>cerasicolella</i> , 32, 69; <i>concomitella</i> , 30, 69, 102; <i>mespilella</i> , <i>oxyacanthæ</i> , 32, 69; <i>pyrivorella</i> , 32, 69, 125; <i>spinirolella</i> , <i>sorbi</i>	32, 69
<i>Lophura pylas</i>	142
<i>Lophuron magnificum</i>	141
<i>Lozopera Francillonana</i>	215
<i>Lycæna Adonis</i> , 208, 240; <i>Amandus</i> , 274; <i>Argiades</i> , 274; <i>argiolus</i> , 159, 208, 274; <i>Argus</i> , <i>Arion</i> , 274; <i>Artaxerxes</i> , 27; <i>batica</i> , 47, 79, 240; <i>Corydon</i> , <i>Escheri</i> , <i>Hylas</i> , 274; <i>Icarus</i> , 26, 79, 198; <i>Lycidas</i> , 79; <i>Pheretes</i> , 272, 274; <i>semiargus</i> , 274; <i>Telecaus</i>	79

	PAGE
<i>Lymantria dispar</i>	198
<i>Macroglossa stellatarum</i>	42, 188, 275
<i>Mamestra abjecta</i>	259
<i>Margarodes unionalis</i>	78
<i>Melanargia Galathea</i>	42, 274
<i>Melanthia rubiginata</i>	28
<i>Melitea Asteria, Athalia, Cynthia, dictynna</i> , 274; <i>didyma</i>	271, 274
<i>Metzneria littorella</i>	127
<i>Mimas tilisæ</i>	198
<i>Nonagria brevillea</i>	278
<i>Nyssia zonaria</i>	9, 41
<i>Oeneis Aëlo</i>	275
<i>Opogona dimidiatella</i>	180
<i>Oresia argyrosigma</i>	143
<i>Orgyia discalis</i> , 145; <i>fascelina</i>	27
<i>Papilio Machaon</i> , 160, 274; <i>Podalirius</i>	274
<i>Pararge Mera</i>	275
<i>Parasemia plantaginis</i>	197
<i>Parnassius Apollo</i>	274
<i>Pelochita vitrea</i>	145
<i>Phalonia sabulicola</i> (n. n.), <i>Wlsm.</i>	194
<i>Phthoroblastis juliana, nimbana</i>	193
<i>Pieris Callidice, Daplidice</i>	274
<i>Plusia interrogationis</i> , 27; <i>gutta</i> , 80; <i>moneta</i>	187
<i>Polyommatus Hippothoë, Phléas</i>	274
<i>Proutia betulina</i> , 38; <i>salicolella</i>	35
<i>Pseudopanthera macularia</i>	116
<i>Psodos alpinata, quadrifaria</i>	275
<i>Psyche villosella</i>	194
<i>Pygolopha rhodophana</i>	153
<i>Pyrameis cardui</i>	180
<i>Retinia sylvestrana</i>	260
<i>Rumia cratægata</i>	159
<i>Satyrus Dryas</i> , 275; <i>Hermione</i>	273, 275
<i>Scotorythra diceraunia, goniastes</i>	258
<i>Serrodus inara</i>	143, 207
<i>Sesia bombylifformis</i>	10
<i>Sphingomorpha Monteironis</i>	142, 207
<i>Sphinx convolvuli</i>	260
<i>Spilodes palealis</i>	259
<i>Spilothyrus alcea, althææ</i>	275
<i>Stathmopoda pedella</i>	260
<i>Stauropus fagi</i>	275
<i>Stilpnolia salicis</i>	62
<i>Syrichthus alveus, Sao</i>	275
<i>Tapinostola Bondii</i>	61
<i>Thecla spini</i>	274
<i>Tinea (Meesia) mensella</i> (sp. n.), <i>pachyceras</i> (sp. n.), <i>Wlsm.</i> , 178; <i>Richardsoni</i> (sp. n.), <i>Wlsm.</i> , <i>vinculella</i>	178

	PAGE
<i>Tortrix musculana, musculinana</i> , 60; <i>semialbana</i>	259
<i>Triphæna hyperborea</i>	197
<i>Vanessa Antiopa</i> , 237, 238, 259; <i>gonerilla</i>	153
<i>Xenolechia æthiops</i>	132, 159
<i>Zelleria phillyrella</i>	4

NEUROPTERA.

<i>Æchna cærulea</i> , 136, 183, 241; <i>mixta</i> , 110, 151, 288	
<i>Agrion hastulatum</i> , 226, 241, 263; <i>puella</i>	88
<i>Anax imperator</i>	151, 262
<i>Baëtis scambus</i>	182
<i>Beræa articularis</i>	180, 264
<i>Bertkausia prisca</i>	220
<i>Cæcilius perlatus, piceus</i>	182
<i>Diplectrona felix</i>	264
<i>Ecdiopteryx guttulata</i>	263
<i>Elipsocus cyanops</i>	182
<i>Enallagma cyathigerum</i>	110
<i>Gomphus flavipes</i>	151
<i>Halesus guttatipennis</i>	263, 288
<i>Hemerobius limbatus</i> , 14; <i>orotypus</i> , 183, 263; <i>pini</i>	183
<i>Hemianax ephippiger</i>	114
<i>Hydroptila Maclachlani</i>	264
<i>Hyperetes guestfalicus</i>	88
<i>Leptophlebia Meyeri</i>	182
<i>Lestes barbara</i>	189
<i>Leucorrhinia dubia</i>	182, 189, 241, 263
<i>Libellula fulva</i> , 65, 151; <i>quadrifasciata</i> , 150, 182, 222, 241, 263	
<i>Limnophilus borealis, ignavus</i>	183
<i>Mantispa simulatrix</i> (sp. n.), McLach. ...	127
<i>Molanna palpata</i>	184
<i>Oxyethira falcata</i>	264
<i>Oxygastra Curtisi</i>	241
<i>Phryganea obsoleta</i>	183, 264
<i>Plectrocnemia brevis</i>	149, 180, 264
<i>Polycentropus Kingi</i>	184
<i>Psectra diptera</i>	288
<i>Psocus bifasciatus, contrarius, interme-</i> <i>dius</i>	242
<i>Rhaphidia cognata</i>	263
<i>Rhinocypha fulgidipennis</i>	114
<i>Somatoclora arctica</i> , 183; <i>metallica</i>	182
<i>Stenophylax alpestris</i>	209
<i>Sympetrum flaveolum</i> , 209; <i>Fonscolombii</i>	43
<i>Taniopteryx Risi</i>	182
<i>Teratopsocus maculipennis</i>	6
<i>Thaumatoneura inopinata</i>	189
<i>Tinodes unicolor</i>	264

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

COLEOPTERA.

GENUS.	PAGE
OROCHARES, <i>Kraatz</i> ..	286
SPECIES.	
Anchomenus quadripunctatus, <i>De Geer</i> (reinstated)	202
Orochares angustatus, <i>Er.</i>	286
Trogophloeus anglicanus, <i>Sharp</i>	232, 261

DIPTERA.

GENUS.	PAGE
LEUCOPHENGIA, <i>Mik.</i>	289
SPECIES.	
Calobata styliifera, <i>Lw.</i>	87
Hyetodesia aculeipes, <i>Zett.</i>	262
Leucophengia maculata, <i>Dufour</i>	251, 289
Xylota confinis, <i>Zett.</i>	56

HEMIPTERA.

SPECIES.	PAGE
Elasmostethus ferrugatus, <i>Fab.</i>	131
Nabis brevis, <i>Scholtz</i>	227
Typhlocyba candidula, <i>Kschb.</i>	280
cruentata, <i>H.-S.</i>	279

HYMENOPTERA.

SPECIES.	PAGE
Blacus armatulus, <i>Roth</i>	288
Crabro carbonarius, <i>Dahlb.</i>	227
Ellampus truncatus, <i>Dahlb.</i>	107
Nomada atrata, <i>Smith</i> (reinstated) ..	204
Odynerus tomentosus, <i>Thoms.</i>	173
Osmia inermis, <i>Gerst.</i>	51
Pompilus sanguinolentus, <i>Fab.</i>	206
Prosopis palustris, <i>Perk.</i>	49
Tenthredopsis Thornleyi, <i>Konow</i>	40

LEPIDOPTERA.

SPECIES.	PAGE
Bacotia sepium, <i>Spr.</i>	2
Eriocrania fimbriata, <i>Wlsm.</i>	106
Phalonia sabulicola, <i>Wlsm.</i> , n. n. (<i>vice</i> <i>erigerana</i> , <i>Wlsm.</i>)	194
Tinea (<i>Meessia</i>) <i>Richardsoni</i> , <i>Wlsm.</i> , (<i>nec</i> <i>vinculella</i> , <i>H.-S.</i>)	176
Tortrix (<i>Loxotania</i>) <i>musculinana</i> , <i>Kennel</i> ..	60
Zelleria phillyrella, <i>Mill.</i>	4

NEUROPTERA.

GENUS.	PAGE
BERTKAUIA, <i>Kolbe</i>	220
SPECIES.	
Agrion hastulatum, <i>Charp</i>	226, 241, 263
Beræa articularis, <i>Pict.</i>	180, 264
Bertkauiia prisca, <i>Kolbe</i>	220
Plectrocnemia brevis, <i>McLach.</i>	149, 180, 264

LIST OF NEW GENERA AND SPECIES, &c., DESCRIBED IN THIS VOLUME.

COLEOPTERA.

GENERA.	PAGE
BLEDIOTROGUS, <i>Sharp</i>	234
TROGOPHLEUS auc. subg. n. TROGOLINUS, <i>Sharp</i>	231

SPECIES.

<i>Bembidium islandicum</i> , <i>Sharp</i> , <i>Iceland</i> ..	254
<i>Blediotrogus guttiger</i> , " <i>N. Zealand</i>	234
<i>Trogophleus anglicanus</i> , " <i>England</i> ...	232
coloratus, " <i>N. Zealand</i>	231
unicolor, " "	232
zealandicus, " "	233

HEMIPTERA.

GENUS.

PERISSOPNEUMON, <i>Newstead</i>	250
---------------------------------------	-----

SPECIES.

<i>Acoloba malleata</i> , <i>Distant</i> , <i>Delagoa Bay</i>	82
<i>Dactylopius formicarius</i> , <i>Newstead</i> , <i>India</i>	249
glacialis, " <i>N. Italy</i>	248
<i>Ilerda sudana</i> , <i>Distant</i> , <i>Central Africa</i> ...	82
<i>Ilipla natalicola</i> , " <i>Natal</i>	82
<i>Perissopneumon ferox</i> , <i>Newst.</i> , <i>India</i> ...	250
<i>Ripersia Wasmanni</i> , " <i>Germany</i>	249
<i>Scaptocoris talpa</i> , <i>Champ.</i> , <i>Guatemala</i> ...	251

HYMENOPTERA.

SPECIES.

<i>Prosopis palustris</i> , <i>Perkins</i> , <i>England</i> ...	49
---	----

LEPIDOPTERA.

GENERA.	PAGE
APATEMA, <i>Wlsm.</i>	219
CYENIA, "	218

SPECIES, &c.

<i>Agrias Sardanapalus</i> , ab. nov., <i>Hades</i> , <i>Lathy</i> , <i>Chanchamayo</i>	29
<i>Agrotis eremoides</i> , <i>Meyr.</i> , <i>Hawaiian</i> <i>Islands</i> ...	257
procellaris, " " " ...	258
<i>Apatema mediopallidum</i> , <i>Wlsm.</i> , <i>Corsica</i>	220
<i>Aristotelia morphochroma</i> , " <i>South of France, Italy</i>	80
<i>Caenaca insulella</i> , <i>Wlsm.</i> , <i>Corsica</i>	153
<i>Cyrenia barbata</i> , " "	219
<i>Eriocrania fimbriata</i> , " <i>England</i>	106
<i>Gelechia apolectella</i> , " <i>Corsica</i>	216
lyciella, " <i>S. France</i> ...	217
micradelpha, " " ...	217
ocymoidella, " " ...	218
<i>Ischnoscia carbonifera</i> , " <i>Corsica</i>	152
<i>Phalonia sabulicola</i> , " <i>England</i>	194
<i>Scotorythra diceraunia</i> , <i>Meyr.</i> , <i>Hawaiian</i> <i>Islands</i>	258
<i>Tinea mensella</i> , <i>Wlsm.</i> , <i>Corsica</i>	178
pachyceras, " <i>Helvetia</i>	178
<i>Richardsoni</i> , " <i>England</i>	176

NEUROPTERA.

SPECIES.

<i>Mantispa simulatrix</i> , <i>McLach.</i> , <i>Borneo</i> ...	127
---	-----

ERRATUM.

Page 124, line 6 from bottom, for "*Specophaga*," read "*Sphecophaga*."

JAN 16 1900

Second Series, No. 121.] JANUARY, 1900.
[No. 428.]

[PRICE 6d.]

14,005.

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. XI.

[VOL. XXXVI.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,
Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.
 DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.
 ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

“NATURE,”

A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE. PRICE 6d.

“NATURE” contains Original Articles on all subjects coming within the domain of Science, contributed by the most eminent scientific writers of the day. It also contains Reviews of all recent scientific works; Correspondence Columns, which form a medium of scientific discussion and of intercommunication among men of Science; Accounts of the leading Scientific Serials; Abstracts of the more valuable papers which appear in foreign journals; Reports of the Proceedings of the Principal Scientific Societies and Academies of the World; and Notes on all matters of current scientific interest.

SUBSCRIPTIONS TO “NATURE.”

	£ s. d.	(To all places Abroad.)	£ s. d.
Yearly	1 8 0	Yearly	1 10 6
Half-Yearly	0 14 6	Half-Yearly	0 15 6
Quarterly	0 7 6	Quarterly	0 8 0

Money Orders to be made payable to **MACMILLAN and CO., Ltd.**

Office: St. Martin's Street, London, W.C.

JAN 16 1900

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

SECOND SERIES—VOL. XI.

[VOLUME XXXVI.]

GREAT FLIGHT OF *COLIAS EDUSA* IN THE WEST OF IRELAND.

BY THE REV. C. T. CRUTTWELL, M.A.

While enjoying an August holiday this year in Ireland at Renvyle, on the beautiful coast of Galway, just opposite the rocky Isle of Achill, I was greatly surprised to observe a large flight of *Colias Edusa*, consisting of several hundred specimens, which had established their head-quarters along a narrow strip of flowery meadow land extending about half a mile in length, between the sandhills and the boggy land within. I counted over two hundred in one day (August 5th), every one of which was a male, and nearly all were in good condition. During the next ten or twelve days I revisited the spot several times, as well as suitable flowery places further south for three or four miles, at several of which I came across single specimens, but never any numbers. I can speak positively to the fact that not a single female was to be seen.

My three boys, who were keen butterfly catchers, took several *Edusa* in their daily rambles, and, following my instructions, kept a sharp look out for a female specimen, but never saw one. I feel quite sure that if that sex had occurred it must have fallen to the net of one of our party. The occurrence seems to me so remarkable, that I venture to send this notice of it to your Magazine, in the hope that it may draw forth some record of a similar experience from other observers. Where the insects came from is a mystery to me, as the corner of Connemara where we were settled down, is a far cry from any of the usual haunts of the species.

Kibworth Rectory, Leicester :
December 7th, 1899.

JANUARY, 1900.

BACOTIA SEPIUM, SPR., IN THE NEW FOREST, WITH NOTES ON ITS CHARACTERS.

BY T. A. CHAPMAN, M.D., F.Z.S.

Mr. Fletcher has just kindly sent me for examination the specimens of a Psychid that are recorded by Mr. Barrett in Ent. Mo. Mag., December, 1895, vol. xxxi, p. 275, as *Fumea betulina*.

These examples are three males, one female, two blown larvæ and cases, one other case with empty female pupa skin, and a male pupa skin, supplying very complete materials for their determination.

They prove to be *Bacotia sepium*, Spr. (= *tabulella*, Bruand).

In pointing out that they are not *betulina*, it seems desirable that I should go into some detail as to the points of distinction between *betulina* and *sepium*, and mention those characters that may be observed in these specimens as they stand, that prove them to be *sepium* and not *betulina*, as my mere *ipse dixit* would be of little weight against the authority of Mr. Barrett, whose work in this group is so distinct an element, leading up to our recent more definite knowledge of the rarer and more obscure British *Psychida*.

THE CASE.—These cases are of peculiar form, short and wide, even a shade protuberant beyond the middle, and ending in a blunt rounded extremity, without any previous tapering, carried nearly vertically to the surface, absolutely so when fixed for pupation, as the specimen affixed to its bit of bark shows, in the instance of the empty female case. The case of *betulina* tapers definitely towards the free end, and is more slender and spindle-shaped, though often at some angle to the surface, it is never carried or fixed vertically to that surface, except, as also occurs in *nitidella*, such a position enables it to hang vertically downwards. The clothing of the case is distinctive. *Nitidella* clothes the case with grass straws, making the case look like a bundle of yellow sticks; *sepium* attaches various pieces of blue-grey lichen, well illustrated in two of these New Forest cases, the third has a bit of bark attached; *betulina* never, well, hardly ever, uses either grass or lichen to clothe its case, but bits of bark, rotten wood, brown dead leaves, and so on, often looking very dirty and smoky from the materials used, brighter and pleasanter to appearance when leaf material predominates.

THE LARVA.—The larva of *sepium* has a black head and thoracic plates, relieved on the thorax by only a median whitish line; *betulina* has brownish subdorsal marking, approaching those of *nitidella* larva. In *sepium* the third thoracic plate is represented by only a small scrap on either side, in *betulina* it is complete across the dorsum, as in *nitidella*. The colour of the abdominal segments in *sepium* is sepia; in *betulina* it is a ruddy or pinkish-brown. Their structure is also very different, the abdominal segments in *betulina* are divided dorsally into two distinct ridges, or subsegments carrying respectively the anterior and posterior trapezoidal (I and II) tubercles. In *sepium* there is no such definite division, and the tubercles are in transverse alignment (approximately) with the anterior tubercle (I) external. The

specimens before me suffice to demonstrate all the above points. The position of the trapezoidal tubercles places *sepium* in an advanced position amongst the higher Psychids, whilst the pupal and other structures show that it belongs, perhaps, rather to the tineoid lower section, but approaching the higher; it is in fact a most interesting transitional form.

THE PUPA.—The male pupa shows the anal spikes to be dorsal, as in all the lower Psychids (micro or tineoid); this is easily observed in Mr. Fletcher's specimen, *betulina* has the anal spikes of the male pupa ventral, as they occur in *Fumea* and all the higher Psychids. I have not felt it necessary to injure Mr. Fletcher's fine specimen of the larva case to demonstrate the female pupa case it contains, as the evidence that these were *sepium* is abundant enough without this. Had I done so, I should have found that the female pupa case has no anal spines, here agreeing with *betulina*, *Fumea*, and the higher Psychids, instead of with the lower, as the male pupa does.

THE IMAGO.—A cursory glance is quite insufficient to distinguish the male of *sepium* from that of *betulina*. In both there is a dark shade at the end of the cell, and the nervures beyond give somewhat darker lines. In fresh specimens of *sepium* one may occasionally observe, as Mr. Barrett notes, some suggestions of telaporiad reticulations, these are usually slight and evanescent, and never, I think, occur in *betulina*. The best distinction between the two insects is one that, for obvious reasons of respect for the integrity of the specimens, I have not observed in these examples, that is, that in *sepium* there is usually (but not always) an accessory cell at the apical angle of the discoidal cell. I put this first, as it marks the alliance of *sepium* with the lower Psychids, which all possess this cell, whilst none of the higher do so. Its variability, as in other items of neurulation in *sepium*, is no doubt related to the transitional position of the species. Two other characters may, however, be observed in these specimens that are quite conclusive as between *sepium* and *betulina*. One of these is the number of antennal joints—26 in *sepium*, 21 in *betulina*; the other is the length of the spine of the anterior tibia, which in *sepium*, as in the lower Psychids and in the Epichnopterygid section of the higher, is of half the length of the tibia. In *betulina* it is three-fourths the length of the tibia, a length very rare in the group, and here marking the transition from the lower and Epichnopterygid Psychids to *Fumea* and *Psyche* proper, which have very long anterior tibial spurs (except where they have lost them, which does not here concern us).

The peculiar short, square-set, pectinations in *sepium*, which rigidly maintain their positions in the dried specimen, are very different from the long flowing pectinations in *betulina*, which twist about more or less in drying.

The female of *betulina* has a pure white apical brush of wool, and, except a few similar hairs, on the thoracic region, and, perhaps, anterior abdominal, the surface is naked, no scales of any sort being visible. *Sepium* has a very general clothing of ordinary scales, which may be easily seen in this, as in any other dried specimen, and the anal tuft is pale brownish.

Shrivalled though the specimen before me is, two other characters of *sepium*, ♀, as distinct from *betulina* may be made out; first, the long first tarsal joint—in *sepium* the relative lengths of the four joints of

the tarsus are, on the first leg, approximately as 4·1·1·2, and on the third as 3·1·1·2, whilst in *betulina* on all the legs the proportions are as 2·1·1·2; secondly, the specimen has a sharp depression running exactly down the dorsal line, this has occurred in drying, and has been rendered possible by the dorsal plates in *sepium*, ♀, having a weak dorsal line, or being actually divided dorsally into two lateral plates.

Betula, Reigate :

November 17th, 1899.

REVISION OF THE NOMENCLATURE OF MICRO-LEPIDOPTERA.

BY THE RIGHT HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

AND

JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

(Continued from Vol. XXXV, p. 200).

COLEOPHORA, Hb.

COLEOPHORA SPISSICORNIS, Hw.

= § *FABRICIELLA*, de Vill.

Phalæna Tinea fabriciella, de Vill., L. Ent. Fn. Suec., II, 527, No. 1077 (1789). *Porrectaria spissicornis*, Hw., Lp. Br., 537, No. 23 (1828). *Coleophora fabriciella*, Stgr. and Wk. Cat. Lp. Eur., 314, No. 2415 (1871), &c., &c.

Haworth's name *spissicornis* must be revived for this species, that of de Villers' is invalid, being homonymous with *Phalæna Tinea fabriciella*, Swederus, Kngl. Svensk. Vet. Ak. nya Hndl., VIII, 277, No. 28 (1787), an Indian Hyponomeutid, belonging to the genus *Atteva*, Wkr., of which *Corinea niviguttella*, Wkr., is a synonym.

OCCURRENCE OF *ZELLERIA PHILLYRELLA*, MILLIÈRE, IN IRELAND.

BY C. G. BARRETT, F.E.S.

Among some insects taken by the Rev. C. T. Cruttwell, of Kibworth, Leicester, during his holiday last summer at Renvyle, near Letterfrack, Galway, I found a specimen of *Zelleria phillyrella*, Millière. Upon seeing this I wrote to Mr. Cruttwell for particulars of its capture, also asking whether by any possibility the species might have been taken *abroad*, and accidentally mixed with the Irish captures? He writes—"I spent over four weeks in Connemara, at Renvyle, a lovely part of the world, full of interesting plants and with considerable variety of surface, but without trees except those in gardens. The weather was fine and warm nearly all the time, and I worked more or

less every day in the vicinity of the hotel. The general result is poor, with the exception of the *Zelleria* about which you ask particulars. I can only say that I beat it out of a stunted oak bush under some rocks at about a stone's throw from the plantation at the back of the hotel. I knew that I had got a good thing, and spent an hour searching and beating all round. There is no doubt whatever about the capture; I took it about 6 p.m. on August 17th or 18th. There was abundance of "London Pride" growing all round, and I thought that this might have been its food-plant. I do not possess any foreign moths whatever."

As this communication set the question of capture quite at rest, I enquired as to whether any species of the food-plant (*Phillyrea*, a South European shrub) is to be found in gardens in the district. This Mr. Cruttwell had not ascertained, but Mr. W. F. de V. Kane now writes, "*Phillyrea* is not uncommon in gardens and shrubberies; *P. angustifolia*, *latifolia*, &c., are favourite evergreens, and *P. Vilmoriniana*, though perhaps tenderer and rarer, is a choice plant in the South and West. As to *Zelleria phillyrella*, it must, I suspect, have been introduced in some species of *Phillyrea*."

This insect, which very closely resembles *Zelleria hepariella*, was originally reared by M. Millière from blossoms of *Phillyrea angustifolia*, and Mr. Stainton's interesting account of his introduction to this larva by its discoverer, on one of the hills near Cannes, and his subsequent capture of imagines in the same place, will be found in the Entomologist's Annual for 1868, pp. 145-6. As this occurred in the spring, Mr. Cruttwell's examples must belong to a second generation,

It is, as already remarked, wonderfully like *Z. hepariella*, but has in the middle of the fore-wings a distinct black discal dot, which is absent in *hepariella*. This character catches the eye at once, but the colour of the fore-wings is not so uniform as in the latter species, there being obscure stripes of yellower-red above the principal nervures near the base, the hind-wings are paler, as is also the head. Yet so near is it to *hepariella* that Mr. Stainton referred the first specimen, which was sent to him in 1866 for examination, to that species. He afterwards fully recognised its distinctness, and described and figured it and its larva in the "Natural History of the Tineina," vol. xi. Here its distribution is given as, besides the South of France, Leghorn and Greece, "so that it is probably distributed over a large portion of the South of Europe." In his "Tineina of Southern Europe" he simply

quotes Millière's descriptions. It now remains to ascertain whether this South European species has made a permanent settlement in the district subject to the milder climate of the West of Ireland.

Tremont, Peckham Rye, S.E.:

November 30th, 1899.

CONCERNING *TERATOPSOCUS MACULIPENNIS*, REUTER, WITH
NOTES ON THE BRACHYPTEROUS CONDITION IN FEMALES
OF *PSOCIDÆ*.

BY ROBERT McLACHLAN, F.R.S., &c.

In his "Finlands Psocider" (Act. Soc. Faun. et Flor. Fenn., ix, 1893), Dr. Reuter described (pp. 27, 29, and 43, 44) as a new genus and species, a Psocid of which a single example had been found in a conservatory at Helsingfors, under the name *Teratopsocus maculipennis*, but he added (p. 44), "Forsitan solum forma brachyptera generis *Graphopsocus*, cujus venæ alarum reductæ."

I quite agree with the doubt thus expressed, and am sure it is a somewhat extreme brachypterous form of the ♀ of *Stenopsocus* (*Graphopsocus*) *cruciatus*, L., and is not very uncommon in England, *in the open*, probably all through the winter in certain localities.

But these brachypterous individuals do not rigidly confine their characters to those of the example described by Dr. Reuter. I had already alluded to a brachypterous condition in my Monograph of British *Psocidæ* (Ent. Mo. Mag., iii, 1867, p. 9, foot note, separate edition), with a figure (pl. ii, fig. 7). This condition was intermediate, and not the more extreme form exhibited in *Teratopsocus*.

In noticing the *Psocidæ* of Madeira (Journ. Linn. Soc. Zool., xvi, p. 175, 1882), I say concerning *S. cruciatus*:—"Some of the Madeiran examples are in a brachypterous condition. In England this condition is most frequent in early spring (as early as February in Cornwall), and is, I think, peculiar to the ♀." These Madeiran examples were taken at the end of November, and amongst them it would be possible to match, almost precisely, the neuration as figured for *Teratopsocus*; *but there is no fixity, the examples exhibiting simply a plastic teratological condition.* The allusion to "Cornwall" and "early spring" refers to the fact that I have constantly received living *S. (G.) cruciatus* all through the winter, and Cornwall is no doubt suitable to such a continuance. I have several examples of this condition, found by myself in Somersetshire in August and in October. In the latter month there was frost in the mornings, when they were found, and

the insects were mostly beaten out of freshly cut faggots. Here, as always, the brachypterous condition varied greatly in amount, and it would be possible, I think, to trace a gradation from *Teratopsocus* to the fully-winged form; in the former the wings *in the living insect* are often shorter than the abdomen, but the markings are very conspicuous, because the basal portion, on which the chief markings are concentrated, can hardly be said to be abbreviated, it is the apical portion that is curtailed. In *Graphopsocus*, as in some other *Psocidæ*, the wings of the ♀ are, perhaps, never so fully developed as they are in the ♂.

In my Monograph of 1867, already alluded to, I stated that I had seen brachypterous forms in five species, including *Psocus nebulosus*, Steph., *Stenopsocus cruciatus*, L., and *Cæcilius pedicularius*, L., and that they probably occur in all. This was, perhaps, too sweeping an assertion. But it would certainly be possible to add to the number then given. And the amount of teratological neuration in *Psocidæ*, not necessarily connected with brachyptery, that has passed under my notice during the last thirty years, is enormous; on this I might, if so disposed, have founded genera, species, and (named) varieties *ad nauseam*. It may be termed Nature's snare, but full of significance from a philosophical standpoint.

Let it not be forgotten that there are certain *Psocidæ* in which the ♂ has ample wings, but in which these organs are *normally* reduced to rudiments (or are practically absent) in the ♀.

Lewisham, London :
November, 1899.

LARGE COLONIES OF ANTS IN NEW ZEALAND.

BY W. W. SMITH, F.E.S.

On March 12th last, I went up to the gorge of the Rangitata River to procure some species of sub-alpine plants, and to obtain a good series of specimens of the several species of ants inhabiting the district.

The weather the following morning was serene and charming, as it generally is in the months of March and April in New Zealand. We were early astir for breakfast, and left our camp at daybreak to enable us to climb to the habitats of the plants we were in quest of before the sun became oppressive. In passing over a talus slope composed chiefly of rough slaty blocks, we turned several of them

over, and found them tenanted underneath by some remarkably large colonies of *Huberia striata*, Sm., and *Monomorium nitidum*, Sm. Although several of the colonies had swarmed, others were crowded with thousands of winged forms ready to migrate and colonize new sites. There are few scenes among social insects more enchanting than the interior of a large colony of ants a few hours before winging their flight to other regions.

The altitude of the slope where we discovered these large colonies is about 2400 feet. As the day promised to be fine, we left them, and continued our ascent of an additional 1500 feet, hoping to find them more active during the warmer afternoon, and to examine the colonies perfectly. We returned to them at 2 p.m., and spent two and a half hours examining the galleries, with a view to observing the habits of already known parasites and economic forms, or discovering new forms associating with them. We found the identical species of Coccids attached to the roots of *Pimelius* and *Carmichaelius* extending, in many directions, through the ramifying galleries which we found a year ago in nests of these species of ants on the Gawlor Downs, 1000 feet lower, and situated twenty-five miles to the north. In excavating their galleries, the ants clear away the soil from around the thicker parts of the roots, and form courts to enable the Coccids to move freely along the roots, and also to enable the worker ants to draw supplies of honeydew or nectar with more freedom to feed their larvæ.

In one large colony we observed fully a hundred individuals of the star-like and delicate cottony-covered *Ripersia formicicola*, Mask., moving freely about the courts, and among the damp roots growing through the site of the nest. There were also numerous clusters of *Dactylopius poæ*, Mask., attached to the thicker roots, but they were of a slaty hue, and slightly larger than the typical reddish-white cottony forms occurring on the plains. *R. formicicola* in the perfect stage moves leisurely about in all parts of the courts and galleries, while *D. poæ* adheres in groups to the roots penetrating the nests. If carefully detached from the root without injuring them, they will move away slowly and awkwardly, and conceal themselves in any nook or shady place.

The colonies were the most populous and healthy, and had constructed the largest galleries and courts of all the many hundreds of nests we have observed and studied during the last twelve years. Several of them were old established colonies, their courts, tracks, and galleries being highly finished and smoothly trodden. The whole

interior of these magnificent colonies, each numbering at least two thousand individuals, exhibited the perfection of cleanliness and order. They contained very few eggs and pupæ, while all the winged forms ready to migrate were remarkably active and well developed. Having somewhat heavy bundles of sub-alpines to carry down the mountains, we very reluctantly left these busy and orderly ant cities, but not before we had captured good living specimens for mounting on cardboard, and put others in spirit tubes for transmission to friends in several parts of the world.

Although admirable work has been accomplished by Huber, Forel, Lubbock, Emery, Farren White, Kirby, and others, on the economy, habits, distribution, and specific structure of ants in the nineteenth century, entomologists of the twentieth century will yet find ample data for working out the methods of distribution and government among all the many distinct and remarkable families of these social insects existing in both temperate and tropical regions.

Ashburton, N. Z. :
September 14th, 1899.

Batodes angustiorana, *Hw.*, feeding on grape-pulp.—In the course of a picnic held at Stonehenge on August 18th last, one of the ladies of our party was just beginning to bite a black grape, grown in a house at Bemerton Rectory, close to Salisbury, when a small larva hurriedly crawled out of a hole in it. I at once took possession of the larva and the grape, and an examination of the latter clearly showed that the larva had been burrowing in and feeding on the pulp of it. The larva was brought home, and was supplied with a black grape, a fresh one being introduced when necessary: it lived in a white silk web, by which it firmly attached the grape to the side of the glass-bottomed box, and entered the grape through a hole bored through the side when it wished to feed, which it continued to do on the pulp. Being very small when found, it was some little time before it became full-fed, but it finally pupated in a gallery in its web, and the imago, a rather small male example of *Batodes angustiorana*, *Hw.*, emerged on September 18th. Grape-pulp seems a strange food for a larva that normally feeds on the shoots of yew and various other trees, and one wonders why the preference was not given to the leaves of the vine if the house contained nothing more palatable. The moth clearly belonged to a second brood, produced no doubt by the heat of the grape-house: I have never met with a second brood under natural conditions.—EUSTACE R. BANKES, Salisbury: October 26th, 1899.

Re-discovery of Nyssia zonaria in the Hebrides.—In the Zoologist for 1844, p. 686, is a statement by the late Mr. J. B. Hodgkinson, which hitherto has not been very much regarded:—"A friend of mine who lately visited the Isle of Skye, observed a great number of the larva of a Geometer very similar to those of *Abrazas*

grossulariata; they were feeding in the burdock, on the summit of Ben Beckley, where he shot a rock dove, the crop of which was completely gorged with them. A few of these larvæ have since changed into pupa." And again, in 1845, page 1006:—"I made a communication respecting some larvæ which were found in the Isle of Skye by my friend Mr. Cooper, of Preston. I saw him last week, and learned that a female *Nyssia zonaria* had come out this spring from one of the chrysalides which was uninjured. Now it is a question whether *Nyssia zonaria* is indigenous to the Hebrides or not; and whether those which have been found at New Brighton, Cheshire, have been originally imported among wool, &c., or rushes that have been used to pack up fish with. My friend informs me that the larvæ were in swarms upon the sandhills of Bernarah and several other islands which he visited."

Evidently this statement was received with perplexity if not incredulity, and Dr. F. Buchanan White, in his valuable "*Lepidoptera of Scotland*," while omitting this species from the List, referred to Mr. Hodgkinson's statement, remarking, "Perhaps some one who has the opportunity will try and solve this enigma by finding and rearing the larvæ in question."

This appeal did not apparently receive any response, and the required confirmation has now been obtained almost by accident. Mr. William Evans, of Edinburgh, who in the midst of much other scientific work, has given me great assistance in working up the *Micro-Lepidoptera* of the East of Scotland, has now, with some of these, sent a fine male *Nyssia zonaria* for inspection. He says, "it was captured in Tiree in the Inner Hebrides in April last (1899) by my young friend Mr. James Baxter, and was sent to me along with some beetles and land shells which he had picked up on the island; it was flying over the sandhills." Mr. Evans has published a brief note on the subject in the "*Annals of Scottish Natural History*," 1899, p. 239. It is a curious and interesting confirmation of Mr. Hodgkinson's statement made 55 years ago.—CHAS. G. BARRETT, Tremont, Peckham Rye, S.E.: November, 1899.

Note on the earlier stages of Sesia bombyliiformis.—When examining the leaves of *Scabiosa succisa* towards the end of June, 1895, I was so fortunate as to find two eggs of *Sesia bombyliiformis* laid on the under-side of a leaf. Repeated searches since have yielded no more, though the larva has been found frequently. An attempt to obtain eggs from bred moths also proved a failure. I have not been able to find any account of the egg or young larva of this species. The late William Buckler's figures as represented by the Ray Society were both taken in the last moult, and no account of the early stages is given; it may therefore be well to record a peculiar feature in the young larva which greatly astonished me. The egg was nearly round with a slight depression on the top, of a green colour, and so far resembled that of its congener, *S. fuciformis* (which is also found here, on honeysuckle), that I had no doubt as to what it was until a short time before hatching, when the body of the young larva could be plainly seen covered with hairs. This was a surprise, and made me think they might produce a *Bombyx* after all. When they made their way through the egg shell I could hardly believe I had a *Sphinx* larva, as they were covered with small black tubercles, bearing forked black hairs, and, although a sort of horn was present on the 12th segment, it seemed too far forward, and more of a bristle surmounted with two black hairs. It was not till after the first moult that

all doubt was dispelled; there was then no mistake as to the caudal horn, though still terminated with several forked black bristles. Eventually they became like the larvæ I was finding later in the same locality, and in due course produced the imago. The above facts are more striking, as no such difference is observed between the young and half grown larva of *S. fusciformis*. How will students of ontogeny account for this?—W. R. JEFFREY, 37, Bank Street, Ashford: Nov. 13th, 1899.

Dinarda dentata: a reminiscence.—The identification of the British examples by Father Wasmann, as quoted by Mr. Champion in the December No., will, as he says, interest British Coleopterists, but the account of the locality and capture in the "Annual" is inexact. One day in September, 1863, Scott and I, after hunting for *Hemiptera* on the heather-clad Addington Hills, arrived at Shirley, on the marginal slope thereof, where there was an old deep sandpit with some water in it, into which beetles and other insects had fallen. Scott went into this pit, and I went forward on to the level ground beyond. There I saw a quantity of *Formica sanguinea* running close together in one direction, and side by side with them, in nearly equal number, *Dinarda dentata*; the progress of many of the latter I soon stopped; Scott then came up and took many prisoners. We saw no nest. The assemblage looked like an excursion from one—a mutual reconnaissance in force—in search of fresh camping ground, but neither in nor in the direction of "the Archbishop's Wood, near Croydon."

This is the true account of the first finding of *Dinarda dentata*, called "the Croydon insect," and though the correction is late in coming, it may yet serve collectors to find the locality, which though altered by lapse of time, may possibly still possess enough descendants of the first *Dinardæ* to satisfy them. Mr. Keys, of Plymouth, wrote to me that in September, 1885, *Dinarda dentata* was found by him in some numbers actually running amongst ants—a blackish species (and therefore not *F. sanguinea*)—in their colony beneath a stone on the grassy slope in front of the sea at Whitsand Bay.—J. W. DOUGLAS, 39, Craven Park Road, Harlesden, N.W.: December 9th, 1899.

Phytosus spinifer at Scarborough.—During an afternoon visit to Scarborough on August 31st I spent an hour or two in searching for *Coleoptera* beneath seaweed at the base of the cliffs to the south of the town. The only species present in any numbers was *Cafius xantholoma*. One specimen of *Phytosus spinifer* was taken, together with single examples of *Ocypus morio*, *Stilicis affinis*, and *Aleochara obscurella*.—J. HAROLD BAILEY, 128, Broad Street, Pendleton: December 7th, 1899.

Homalota puberula, Sharp, and other *Coleoptera* at Chesham.—A considerable number of *Homalota puberula*, Sharp, were swept from long grass at the edge of a wood in this district by myself during the afternoon of September 21st; the only previous capture hereabouts being one specimen found near Tring in dead leaves last autumn. While searching early in October for *H. clavigera*, Scriba, I turned up a couple of *H. validiuscula*, Kr. Of *H. planifrons*, Sharp, I have one example (a ♀) taken here by sweeping early in the summer. The undermentioned *Coleoptera* I have also taken in this district during the past summer:—*Homalota perezigua*, Sharp, and *H. pilosiventris*, Thoms., under a dead rabbit, *H. villosula*, Kr., in refuse, *H. orphana*, Er. (1), by sweeping, and *H. pruinosa*, Kr.—this species has I fear been

much disturbed in its original locality, the ground having for two successive years come under the plough, I have, however, succeeded in finding it at a fresh spot, a little distance from the old one. *Gyrophana Poweri*, Crotch, and *Oligota apicata*, Er., both very scarce, in fungus, in September. *Scopæus sulicollis*, Steph., under stones in chalky pastures. *Medon obsoletus*, Nordm., with the preceding species. *Platystethus nitens*, Sahlb., in refuse near Tring. *Coryphium angusticolle*, Steph., I noticed this insect on the wing in numbers on October 22nd, and many specimens were to be found settled on gate posts, stiles, &c. *Homalium exiguum*, Gyll., scarce, in a dead rabbit, *Hapalaræa pygmaea*, Payk., in fungus. *Euthia plicata*, Gyll. f., *E. scydmonoides*, Steph., one of each, and *Agaricophagus cephalotes*, Schmidt (2), taken by evening sweeping. *Anisotoma ovalis*, Schmidt, seems to be one of the commonest species of the genus in this neighbourhood; I have captured several in lanes near, during June. Two examples of *Agathidium globosum*, Muls. (*concezum*, Sharp), were taken about a fortnight ago in very rotten leaves. *Olibrus flavicornis*, Sturm, a few, in flowers, also found here in previous years in moss, and once in the hollow portion of an old bone. *Meligethes bidens*, Bris., rather more abundant than usual, in the flowers of *Scabiosa arvensis*. *Anommatus 12-striatus*, Müll., in a piece of rotten sacking. *Mycetophagus piceus*, F., and *Triphyllus suturalis*, F., in fungus on an old beech stump. *Platycis minutus*, F., one specimen, by sweeping in a wood. *Longitarsus picipes*, Steph., very widely distributed, and usually attached to composite plants; I have seen it on species of *Matricaria*. *Apion flavimanum*, Gyll., on *Origanum vulgare*. *Gymnetron melanarius*, Germ., and *Ceuthorrhynchus euphorbiae*, Bris. (1), by sweeping *Veronica Chamædrys*. *Bruchus canus*, Germ., was taken in September, from *Onobrychis sativa*.—E. GEO. ELLIMAN, Chesham, Bucks: November 15th, 1899.

Variation of Throscus dermestoides, Linn.—The females of this species, which (as in *T. carinifrons*, Bonv.) may be readily known from the males by their much shorter antennæ, with a shorter and narrower club, vary greatly in size and shape, some examples being very small and narrow. A specimen of this kind has recently been sent to me for examination by Mr. P. B. Mason, from Sherwood, from the collection of the late A. Matthews, labelled "n. sp.," and of which he had found a description in MS. amongst that gentleman's papers. I have a similar specimen from the New Forest. These insects are certainly nothing but extreme forms of *T. dermestoides*, the structure of the head, eyes and prosternal sutures agreeing perfectly. It may be noted that the smallest examples I have seen of *T. carinifrons*, and of *Melania buprestoides* also, out of a very large number in each case, are females.—G. C. CHAMPION, Horsell, Woking: December 11th, 1899.

Coleoptera at Richmond.—On September 23rd last I secured a fine series of *Stenolophus teutonius*, Schr., in a damp spot just outside the Park, *Chlanis vestitus*, Payk., and *Anchomenus marginatus*, L., occurred freely with it; visiting the spot a few days later I found the heavy rains had put the place under water, a condition in which it still remains. On September 30th I secured a specimen of *Notiophilus rufipes*, Curt., in the Park under dead leaves, and on October 25th it again turned up at the same place, accompanied by *N. substriatus*, Wat. My garden produced on November 18th a fine specimen of *Platyderus ruficollis*, Marsh.—T. HUDSON BEARE, King's Road, Richmond, Surrey: December 7th, 1899.

Aculeate Hymenoptera at Stoborough Heath and Wareham, Dorset.—I spent three weeks this summer (July—August) in a thorough search for *Odynerus basalis*, but, to my great disappointment, without success. In 1895 and 96 I had visited Stoborough in August, and fancied if I could get in a week or two in July I should probably re-discover this species; but it was not to be, *basalis* could not be found, nor did the collecting generally prove good, Wareham yielding far more rarities. Here, in the earthen ramparts of this charming old town, *Mutilla rufipes*, Latr., was found in numbers, the beautiful bee, *Dasypoda hirtipes*, was equally common, and *Myrmosa melanocephala*, Fab., *Salix affinis*, v. d. L., *Pompilus rufipes*, Linn., *Megachile argentata*, Fab., and other interesting Aculeates gave an interest to a day's collecting.—G. A. JAMES ROTHNEY, 8, Versailles Road, Anerley: Oct. 21st, 1899.

Aculeate Hymenoptera at Birmingham, &c.—Nearly all my collecting this season has been at Moseley, Birmingham. A move from a grand locality like Sutton Coldfield, with its wild Park of 2000 acres, to Moseley, a suburb of Birmingham, was not a cheerful prospect from a collector's point of view, but so far it has proved better than I expected. The south side of Birmingham years ago used to have a fair reputation for Aculeates, but the builder has obliterated most of the best spots, nevertheless, good insects still remain, as the following results will show:—

Myrmosa melanocephala (2 ♂, 4 ♀). *Salix notatulus* (3). *Pompilus niger* (10), *gibbus*, *unguicularis*, *pectinipes* (the last two new to me). *Diodontus minutus* (common), *tristis*. *Passalæus insignis* (4). *Pemphredon Shuckardi* (common). *Ceratophorus morio* (2), *Mimesa Dahlbomi*; these two rarities are additions to my collection. *Psen pallipes*. *Gorytes tumidus*, Birmingham is an old locality for this rarity. *Prosopis communis*, *hyalinata*, *brevicornis*. *Mellinus arvensis*, the first time I have met with this in the Midlands. *Oxybelus uniglutinis* in swarms, could take a dozen at one stroke of the net. *Crabro* well represented—*clavipes*, *palmipes*, *varius*, *dimidiatus*, *cribrarius*, *peltarius*, *chrysostoma*, *interruptus*, *cephalotes*; the last named species, although common in the south, seems rare in the Midlands, as I have never taken it before. *Odynerus spinipes*, *callosus*, *parietum*, *pictus*, *trimarginatus*, *trifasciatus*. *Colletes Daviesianus*, very common. Seven species of *Sphecodes* occurred—*gibbus*, *subquadratus*, *pilifrons*, *affinis* (all four common), *similis*, *dimidiatus*, *puncticeps* (1). *Halictus leucozonius*, *atricornis*, *leucopus*, *Smeathmanellus*, *morio*. *Andrena rosa* v. *Trimmerana* (common), two males of second brood taken in August, *nigroaenea* (in my garden), *humilis*. *Nomada Lathburiana*, *alternata*, *flavoguttata*. *Osmia rufa*, nests in side of house between the bricks, *fulviventris*, an addition to the list. *Chelostoma florissomne* in my garden. Four species of *Psithyrus* occurred—*rupestris*, *vestalis*, *campestris*, *quadricolor*. *Bombus hortorum* was taken in great variety, and also the vars. *lucorum* and *virginialis* of *terrestris*.

Three days spent in the neighbourhood of Evesham in the middle of August yielded *Psen pallipes*, *Prosopis communis*, *hyalinata*. *Halictus tumulorum*, *morio*. *Crabro vagus*. *Megachile ligneseca* ♂. *Anthophora furcata*. *Bombus sylvarum*.

Sutton Coldfield—one ♀ of the rare *Halictus lævigatus* was taken here, and three ♂s of *Crabro interruptus* bred from the same locality.

I am indebted to Mr. Edward Saunders for naming the more obscure species.—RALPH C. BRADLEY, Moseley, Birmingham: November, 1899.

Hymenoptera and Hemiptera at Harting, Sussex.—Amongst some insects sent to me by Mr. A. Beaumont to name, I think the following are worth recording, as Harting is a locality in which few entomologists have worked. *Leptothorax acer-vorum*, Fab., *Tapinoma erratica*, Latr., *Plociomerus fracticollis*, Schill., *Corisus maculatus*, Fieb., *Cymus melanocephalus*, Fieb.—E. SAUNDERS, Woking: November 25th, 1899.

A striking instance of neural variation in a Psocid.—I have elsewhere (p. 7) in this No. alluded to the frequent examples of abnormal neural structure in Psocids. A remarkable specimen exists in Mr. Briggs' collection. The insect is certainly a *Cæcilius* (and probably *C. obsoletus*, Steph.), but in both anterior wings the "area postica" is absent, so that on this character it is a *Peripsocus*; the neuration of one side is otherwise abnormal, but the wings are fully developed.—R. McLACHLAN, Lewisham: December, 1899.

Hemerobius limbatellus in Surrey.—I recently took an opportunity of asking Mr. K. J. Morton's opinion of a *Hemerobius* included doubtfully among the series of *H. subnebulosus* in Mr. Wormald's collection. Mr. Morton returned it as *H. limbatellus*, an opinion since confirmed by Mr. McLachlan. The specimen was beaten from spruce fir at Leith Hill, Surrey, on June 6th, 1869, and is the second recorded British specimen, the other (cf. Ent. Mo. Mag., ser. ii, vol. x, p. 152) having been taken at Black Park June 25th, 1873.—C. A. BRIGGS, Rock House, Lynmouth: December 7th, 1899.

Local and rare Diptera taken in the New Forest, 1899.—The past season was, as regards weather, very similar to that of 1898, and *Diptera* were again scarce. I was fortunate enough, however, to take the following, in addition to most of the species mentioned in my general list last year (Ent. Mo. Mag., vol. xxxv, p. 95). *Ceroplatys sesiioides*, Whlbg. (1), *Epiphragma picta*, F. (1), *Stratiomys potamida*, Mg. (1), *Dioctria Reinhardi*, W. (1), *Anthrax flava*, Mg. (4), *A. fenestrata*, Fln. (8), *Thereva annulata*, F. (♂ com.), *Pipunculus sylvaticus*, Mg. (2), *Syrphus grossularia*, Mg. (2), *Catabomba pyrastris*, L., var. *unicolor* (1), *Sphegina clunipes*, Fln. (1), *Mallota eristaloides*, Lw. (5), *Callicera ænea*, F. (1), *Macronychia agrestis*, Fln. (1), *Gastrophilus equi*, F. (1), *Tricophthicus semipellucidus*, Ztt. (2), *Amanrosoma fasciata*, Mg. (16), *Neottiophilum præustum*, Mg. (1), *Dorycera graminum*, F. (3), and *Urellia stellata*, Fuessl. (1). [From the Rev. E. N. Bloomfield I also received (alive) a nice series of *Tephritis bardana*, Schk., bred from heads of *Arctium lappa* found in Norfolk, and he also sent me some galls of *Centaurea nigra*, from which I obtained six *Urophora solstitialis*, L.]. I arranged my summer visit to Lyndhurst especially for *M. eristaloides* and *C. ænea*, and arrived on June 22nd last just as the wild roses and Portugal laurels were coming nicely into bloom, but did not see either species until the 28th, on which day I took two *Mallota* in Brick Kiln Enclosure. The following day I went to Rhinefields, and found that since my last visit the beautiful rhododendrons had been woefully thinned and hacked about, many being chopped down to the ground, and the remainder cut back to a formal line behind the ditch on each side of the drive. It will be many years before the shrubs recover from this rough treatment, and it seemed almost adding insult to

injury to find the woodman with some workmen busy putting up a large notice board bearing the inscription, "Visitors are requested not to injure the trees and shrubs in this drive!!" Although the day was perfect, I saw few *Diptera* worth netting until just before leaving, when I took two *M. eristaloides* and a few *Alophora hemiptera*, F. The next day I tried Brick Kiln again, and was rewarded with one *C. ænea*, but no *Mallota* came in my way until reaching home, when I took one in the garden on the flowers of *Heracleum giganteum*. This hardy weed-like plant had a thick stem about 8 feet high, which supported a large umbel of flowers over two feet in diameter, and the strong but not unpleasant scent was attractive not only to *Diptera* but insect life generally. Five *Mallota* and one *Callicera* had now fallen to my net in three days, and at this rate I was looking forward to being able to supply my Dipterist friends with specimens, but unfortunately I was taken ill and did not get about again for nine days, during which time both species seemed to have entirely disappeared.—FRED. C. ADAMS, 50, Ashley Gardens, S.W. : Nov., 1899.

Reviews.

REPORT OF THE GOVERNMENT ENTOMOLOGIST (Chas. P. Lounsbury, Cape of Good Hope) FOR THE YEAR 1898. 8vo, pp. 64, with 9 plates. Cape Town, 1899.

This is an excellent Report, full of details interesting even to those who are not specially economic entomologists; to those who are it is indispensable. The range of subjects is very wide; a large proportion of the pests are undoubtedly introduced. Quite a "trade" is being established in "*Vedalia*," the coccus-destroying Australian Lady Bird, no less than 41 packages having been distributed (at a nominal charge) during the year, some even to Portugal. There is a capital Index, and the plates are characteristic, even if slightly rough.

GENERAL INDEX TO MISS ORMEROD'S REPORTS ON INJURIOUS INSECTS, 1877 to 1898: by ROBERT NEWSTEAD, F.E.S., with preface by Miss ORMEROD. 8vo, pp. 58. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1899.

A carefully compiled classified list of the subjects referred to in the Annual Reports published during the 22 years that Miss Ormerod has been so disinterestedly engaged on the Injurious Insects of this country, and which must necessarily be in the hands of all who possess these Reports. Miss Ormerod announces that a second series is about to be commenced, and that in it she will have the assistance of Mr. Newstead: she could not have done better.

Obituary.

John Brooks Bridgman, F.L.S., will be a name known to posterity as that of one of the few who studied the parasitic *Hymenoptera* in Britain during the nineteenth century. Bridgman practised as a dentist at Lynn, and, for a great many years, in St. Giles' Street, Norwich, an address well known to most of us, who have either sent him bred parasites to name for us, or to ask him for particulars of their interesting economy, and in no case was his knowledge withheld from any who

might seek to benefit by it. The love of Natural History probably descended from his father, the late W. K. Bridgman, who studied, among diverse branches, Norfolk *Coleoptera* to some extent. Conchology appears to have been one of our subject's earliest bents, of which he published a list of the Norfolk species in 1872. Later, however, he appears to have entirely devoted himself scientifically to *Hymenoptera*, and when he finally relinquished the study in 1895 he had become an adept. He wrote less than we could have wished upon that subject, which, perhaps above all others, is neglected by the English entomologist, the *Ichneumonidæ*. It was, nevertheless, upon this family that "feelers" were put forth in the "Entomologist" for 1878, and upon which he, in conjunction with Mr. Fitch, gave us his masterly "Introductory Papers." This series, which, unfortunately, was not completed in 1885 (though we understand much of the remaining MS. exists), must form the foundation upon which to work the British species. It lacks part of the *Ophionidæ*, and the whole of the *Tryphonidæ* and *Pimplidæ*. A great number of new British species and many new to science were chronicled by Bridgman in his "Additions" in the Trans. Ent. Soc. Lond. (1881—86), which must always be worked along with Marshall's "Catalogue." Nearer home, he published in the Trans. of the Norfolk Naturalist's Society—of which he was an original Member, a past President (1875—76), and Vice-President at his death—a list of the *Hymenoptera-Aculeata* and *Chrysididæ* of the county in 1879, supplemented in 1882 and 89; of the *Tenthredinidæ* in 1888, suppl. 1890; and of the *Ichneumonidæ* in 1893—94. On July 3rd, 1895, Bridgman presented the whole of his Hymenopterous collections, and about forty volumes bearing upon the subject, to the Norwich Castle Museum. The Aculeates and *Tenthredinidæ* are a fine lot, and the Ichneumons represent, if not the most numerous, at all events the best arranged and most fully named collection in Britain, speaking eloquently of hours of close and untiring study. We regret to say that this assiduous study was too much; having to abandon it, Bridgman appears to have been somewhat at a loss for mental food and took to deep sea fishing; he was, however, attacked with blood poisoning while staying at Scarborough, and returned to Norwich, where he died in his sixty-third year. As a Mason he was a shining light throughout East Anglia; to a stranger, abrupt and somewhat shy; as a friend, extremely kind and generous; as a Hymenopterist, we revere him.—CLAUDE MORLEY (*Supplementary notice*).

Frederik Maurits Van der Wulp.—A conspicuous loss from the list of European Entomologists, and especially from the list of Dipterologists, has been caused by the death of F. M. Van der Wulp, which occurred at the Hague on November 27th last. He wrote very extensively from 1857 until the present time, though his health had failed somewhat during the last six months. Through the kindness of the husband of his only daughter, with whom he had lived since the death of his wife in 1895, we learn that he was nearly 81 years old, as he was born on December 13th, 1818. His earliest contribution to Entomology was in 1842, but he wrote no more until 1857, after which he wrote on Netherland *Diptera*, which he caused to be placed on a fairly good basis, as he published a "List of Netherland *Diptera*" in 1859, which he revised in 1864, and of which he issued a new list in 1898. In his earlier writings he contributed a great deal towards the study of the little known groups, *Chironomidæ* and *Mycetophilidæ*; after 1867 he was attracted by the large

collections of North American and South Asiatic *Diptera* to which he had access, and he published many papers on them, more especially interesting himself in the *Asilida*, *Desida*, &c., but by no means limiting himself to any family. His early writings showed a most distinct development from the distinctions used at that period, and his facile pencil very much aided his descriptions. He never lost his ease of drawing, but during the last few years while he had been working at the Biologia Centrali-Americana he may have to a certain extent failed to keep level with the critical distinctions of the present day, especially in the chaetotatic characters. Nevertheless, there cannot be any doubt that his death has caused us the loss of one of our most talented Dipterologists, and this is proved by the fact that he had been elected Honorary Member of many of the European Entomological Societies, while the Tijdschrift voor Entomologie probably owed to him its continued existence from its start in 1858. In private life he began as a civil officer in the Dutch Audit Office, from which he retired after 50 years' service, when he was nominated Knight of the Order of Orange-Nassau.—G. H. VERRALL.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 16th, 1899.*—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Mr. R. C. Bradley showed two specimens of a *Solenobia* which he had previously exhibited as *S. Wockii*, to which species they had been assigned by Mr. C. G. Barrett; recently, however, they had been sent to Mr. J. W. Tutt, who thought they were a variety of *inconspicuellæ*, and who sent them on to Lord Walsingham and Mr. J. H. Durrant, who said that they were certainly not *Wockii*, but did not know to what species to assign them. Mr. Bradley, a case of Brazilian butterflies. Mr. J. T. Fountain, *Lepidoptera* obtained in the Valley of the Wye at the beginning of last August; amongst other species he found *Apatura Iris* not uncommonly, *Thecla w-album* common but worn, *Vanessa polychloros*, *Grapta c-album* common, *Triphena interjecta*, *Tethea retusa*, *Catocala nupta*, &c. Mr. Colbran J. Wainwright, a short series of *Tephrosia extersaria* from Wyre Forest, where he said the species had been quite common this year, although in previous years only single specimens had been taken by various Members; also a specimen of *Vanessa Atalanta* from Cornwall, and one of *Melanippe fluctuata* from Handsworth, both of which were considerably smaller than the usual examples of these species. Mr. G. T. Bethune-Baker, a number of *Erebia*, including many *Blandina* from various localities in Britain and on the Continent, and pointed out that the Scotch showed more red than the Swiss.

In the report of the Meeting of August 21st it was stated that *Leucania straminea* had been bred for the first time: this of course was an error; there is a full description of the larva in Buckler's "Larvæ of British Lepidoptera."—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *October 12th, 1899.*—Mr. A. HARRISON, F.L.S., F.E.S., President, in the Chair.

Mr. F. Bennoch-Carr and Mr. F. M. Bennoch-Carr, of Handen Road, Lee, were elected Members.

Mr. Fremlin exhibited extremely interesting and varied series of *Lepidoptera* captured at Stornoway, including *Melanippe montanata*, *Camptogramma bilineata*, and *Eupithecia*, sp. ? Mr. Montgomery, a series of *Epinephele hyperanthus* reared from ova deposited on July 21st, 1898, and read notes on the appearance, hibernation, and variation of the species in its different stages. Mr. Adkin, two specimens of *Syrichthys malva*, var. *taras*, taken in the neighbourhood of Abbot's Wood, with the type and intermediates; a discussion ensued as to its regular occurrence. Mr. A. Russell, a mass of cocoons of *Eriogaster lanestris*, including composite cocoons and a portion of the larval "nest," from Polegate, and a bunch of cocoons of *Saturnia pavonia* from Fleet, with a separate cocoon containing pupa, and pupa and imago of a species of *Diptera*. Dr. Chapman, larvæ of *Leioptilus Lienigianus* in the spun-up leaves of Wormwood, preparing for hibernation. Mr. Kaye, bred and captured specimens of *Pseudoterpnæ pruinata* from Byfleet.

October 26th, 1899.—The President in the Chair.

Mr. Tomlinson, of Kingston-on-Thames, was elected a Member.

Mr. South exhibited, on behalf of Mr. Fowler, of Ringwood, the following varieties of *Lycæna Corydon*:—(1) a specimen with a shining spot on each fore-wing; (2) a series with the black hind marginal borders replaced by white quadrate spots; (3) a male with traces of orange lunules on the upper-sides of the hind-wings; he also exhibited a long series of *Emydia cribrum*, showing extensive variation. Mr. Harrison, a series of *Grammesia trigrammica*, including several dark varieties approaching var. *bilinea* from Delamere Forest. Mr. F. M. B. Carr, (1) *Dryas Paphia* from the New Forest, a very fine banded *Valezina* form, taken in July, 1898; (2) a dark form of the same species. Mr. Barnett, a bred series of *Cidaria truncata* (*ruscata*) from eggs laid by a female captured at West Wickham on June 10th; all were smoky, approaching v. *perfuscata*. Mr. Merrin communicated a paper, entitled, "Colour in Nature." Mr. Claude Morley, F.E.S., communicated a paper, entitled, "Insects and the Balance of Nature: Elementary Notes on Ichneumons."

November 9th, 1899.—The President in the Chair.

A special pocket box exhibition. Mr. McArthur exhibited series of *Triphæna comes*, v. *Curtistii*, from Hoy; *Aporophyla lutulenta*, v. *lunebrugensis*, and v. *sedii*, from Orkney; an extremely dark *Agrotis cinerea* and *Dianthæcia carpophaga*, with snowy ground tint. Mr. Adkin, his long and extensively varied series of *Boarmia repandata*. Major Ficklin, series of *Dianthæcia luteago*, v. *Ficklini*, showing a tendency to the tint of v. *Loweii*. Mr. Kaye, long and varied series of numerous *Sphingidæ* collected by himself in Jamaica, Trinidad, and S. America. Mr. H. Moore, specimens of the tropical American bee, *Eulema dimidiata*, and read notes on its relation to the fertilization of the orchid *Catasetum tridentatum*. Mr. Chittenden, a very large number of striking varieties and local species of *Lepidoptera* taken in the neighbourhood of Ashford, Kent, during the last quarter of a century, including *Aporia cratagi*, *Deilephila livornica*, *Plusia moneta*, and *Pachetra leucophaea*. Mr. Lucas, two scarce species of dragon-flies, *Æschna mixta*, from Esher, and *Somatochlora metallica*, taken by Mr. C. A. Briggs in Inverness-shire; also three species of *Coleoptera* from Tripoli, *Anthia venator*, *A. 6-maculata*, and *Scarites striatus*, large coast frequenting Carabids. Mr. Colthrup, a very blue

female of *Polyommatus Icarus*, and a series of very dark *Melanippe fluctuata*. Mr. F. B. Carr, bred specimens of *Lithosia griseola*, and *v. stramineola* from Wicken, *Notodonta trepida* from New Forest, *Drymonia chaonia* from Bexley, and *Iodis vernaria* from Shoreham. Dr. Chapman, seventeen species of the genus *Erebia* taken during some two months spent in Switzerland this year, including *E. epiphron*, *E. Mnestra*, *E. flavofasciata*, *E. glacialis*, *E. lappona*, *E. Christi*, *E. liges*, *E. æthiops*, and *E. Gorge*. Mr. Mitchell, *Locusta viridissima* from Folkestone Warren, the Coleopteron *Prionus coriarius* from Richmond, and a smoky suffused example of *Smerinthus ocellatus*. Mr. Buckstone, exceedingly small specimens of *Pieris rapæ*, *P. napi*, *Hipparchia Semele*, *Polyommatus (Adonis) bellargus*, *Anthrocera filipendulæ*, and *Arctia Caja*; the last being one of fifteen similar ones bred from larvae fed on black currant leaves. He also showed numerous aberrations. Mr. Harrison, varied series of *Aporia crataegi*, *Pieris napi*, var. *bryonia*, *Euchloë cardamines*, and *Leucophasia sinapis*, all from Meiringen, Switzerland. Mr. F. M. B. Carr, short series of *Agrophila trabealis (sulphuralis)* from Tuddenham, *Erastria fuscula* and *Bankia argentula* from Chippenham, *Hydrelia uncula*, and *Earias chlorana* from Wicken, together with various species and varieties.—HY. J. TURNER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: November 13th, 1899.—Mr. S. J. CAPPER, F.I.S., President, in the Chair.

Messrs. Tyerman, Harrison, Ackerley, Tonkin, and Dr. Chaster were elected Members.

Mr. C. G. Barrett, F.E.S., of London, gave an address on "The hairy eyes and abdominal tufts of *Lepidoptera*." In it he showed that, though other characters must be relied upon for families, yet these features might be used to classify genera. Mr. John E. Robson, F.E.S., of Hartlepool then addressed the Meeting on the subject of "Arrangement." He spoke of the value of Stainton's Manual; he thought that no system of Classification could be perfect which was not based on total characteristics. How unreliable external characters often are, he showed by reference to the close mimetic resemblances of many exotic butterflies belonging in reality to widely separated families. Mr. Newstead detailed the interesting life-history of *Selandria atra*, the pear tree saw-fly, as observed by himself, and exhibited a case of specimens illustrating it throughout. To destroy them he recommended the use of Paris green. He also communicated notes on *Piophilæ casei*, the cheese hopper, showing how very tenacious of life it was by the fact of larvae which had been subjected to water, methylated spirit, glycerine, and absolute alcohol, producing perfect insects! The following exhibits were made:—Species of the genus *Oporabia*, with genitalia photographs, by Mr. F. N. Pierce; eleven drawers of *Lepidoptera* taken at the Chester electric lamps, including *A. betularia* (type black and intermediate vars.), *Acronycta alni*, *Ephestia splendidella*, &c., by Dr. Dobie; vars. of *Abraxas ulmata* and *grossulariata*, by Mr. B. H. Crabtree; Spring captures in the New Forest, by Dr. Cotton; an ingenious device for setting *Lepidoptera* with greater accuracy, by Mr. Geo. O. Day; a case of *Lepidoptera*, by Mr. J. Collins; Pupæ of *Nemobius Lucina*, by Mr. Prince; a box of insects for distribution, by Mr. John Robson; *Cleora glabraria*, a new record for N. Wales, by Mr. F. Birch.—F. BIRCH, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: November 15th, 1899.—Mr. G. H. VERRALL, President, in the Chair.

The President announced the death of Dr. C. G. Thomson, one of the Honorary Fellows of the Society.

Mr. Ernest Charles Bedwell, of 27, Loughborough Road, Brixton, S.W.; Mr. Harry Haden May, of Redlands, Hillbury Road, Upper Tooting, S.W.; and Mr. H. A. Varty, of 61, Queen's Road, Aberdeen; were elected Fellows of the Society.

Mr. J. J. Walker exhibited four examples of a species of *Curculionida*—*Cleonus sulcirostris*—taken on red sandy soil at Barr's Hill, near Oxford. These examples, he pointed out, were of a reddish tint, harmonising with the colour of the soil on which they were found, and in marked contrast to that of normal grey specimens, some of which, taken at Deal and Reading, he showed for comparison. The President, specimens of *Chersodromia hirta*, a Dipterous insect, which were found by Colonel Yerbury under sea-weed at Brora in August, 1899. Mr. G. W. Kirkaldy, two species of *Hemiptera* of economic interest, one a Pyrrhocorid—*Dysdercus cingulatus* (Fabr.)—sent by Mr. E. E. Green from Ceylon, where it was found appearing in abundance on the cotton plants, the other a Psyllid—*Aleurodicus Dugesii*, Cockl.—forwarded by M. A. Dugès, who stated that it is attacking the white mulberries in Mexico. Mr. J. H. Leech contributed Part III of his paper on "*Lepidoptera Heterocera* from Northern China, Japan, and Corea."

December 6th, 1899.—The President in the Chair.

Mr. Francis Gayner, of 20, Queen Square, W.C., and Mr. F. B. Jennings, of 152, Silver Street, Upper Edmonton, N., were elected Fellows of the Society.

Mr. J. J. Walker exhibited a specimen of *Colias marnoana*, Rogenh., taken, with other examples, by Lieut. Constable, R.N., at Massowah, on the Red Sea; he considered this form to be only a dwarfed race of *C. Hyale*, Linn., and for comparison with it he showed specimens of the var. *nilgherriensis*, Feld., from Central India, and of the var. *simoda*, De L'Orza, from Japan. Dr. Chapman, a series of specimens, selected from various English collections, together with a few foreign examples, in order to illustrate the English forms found within the genus *Fumea*; also specimens of *sepium*, *betulina* and *salicolella*, and remarked that the first of these species was very properly placed by Mr. Tutt in a new genus (*Bacotia*), since it is a transitional form, having as great affinities with *Solenobia* as with *Fumea*; while the other two species, though perhaps not distantly allied to *Fumea*, did not truly belong to that genus, and were well placed by Mr. Tutt in a new genus (*Proutia*). Dr. Chapman then read some notes relating to the genus *Fumea*, and to characters, chiefly drawn from structure, by which the different species may be distinguished. Mr. Malcolm Burr called attention to Dr. Sharp's paper on "The modification and attitude of *Idolum diabolicum*," recently published in the "Proceedings of the Cambridge Philosophical Society" (vol. x, part iii); he exhibited the plate, drawn after nature by Mr. Muir, which illustrates the paper, pointing out that no drawing of this kind, showing a Mantid in its natural colours simulating the petals of a flower, had hitherto been published; also species of *Mantodea* of various genera, to show the different modifications by means of which insects of this group are made to resemble leaves and flowers. Mr. Kenneth J. Morton communicated a paper, entitled, "Descriptions of new species of Oriental *Rhyacophila*."—J. J. WALKER and C. J. GAHAN, *Hon. Secretaries*.

COLEOPTERA AND LEPIDOPTERA AT RANNOCH.

BY J. J. WALKER, R.N., F.L.S.

A visit to Rannoch, the classic Entomological station of Scotland, had for many years been one of my unfulfilled wishes; and it was therefore with no small satisfaction that I found myself *en route* for the North on July 18th, glad enough to escape from the stifling heat, dust, bustle and smells of Chatham Dockyard to the fresh breezes and delightful scenery of the Highlands.

After a seventeen miles' drive in the post-cart from the little railway station in the middle of the great Moor of Rannoch—surely one of the most forlorn and desolate looking places it has ever been my lot to see—I arrived at Kinloch soon after noon on the 19th, and found excellent quarters at that traditional resort of entomologists, the Bunrannoch Hotel, where I remained until August 9th. My first excursions not only showed me that I was much too late for many of the better insects, but that Rannoch is a really difficult district to collect over, and that every “good thing” taken had to be fairly earned by hard work. Although the whole of the ground looks most promising, and it is difficult to select any one spot as more favourable for insects than the rest, a great many species, especially in the *Lepidoptera*, are restricted to a very limited space, and unless a stranger is guided to these localities, he runs the risk of missing many of the Rannoch specialities altogether. I am therefore much indebted to Dr. H. McCallum, the resident medical man, and a keen Lepidopterist, who introduced me to the head-quarters of several interesting species; as well as to Mr. W. Reid, of Pitcaple, whose genial and instructive company I enjoyed during the first half of my stay.

Any collector visiting Rannoch will find his work greatly facilitated by the use of a bicycle, as the excellent level road extending all round the Loch gives easy access to all the points from which the most productive spots can be best reached. Not being a cyclist myself, nearly all my excursions had to be made on foot; and after rambling and scrambling about over rough country from morning till night, often climbing more than 2500 feet, and turning over several tons of stones in search of beetles, it may readily be imagined that I was not disposed to turn out for sugaring or other night work, so the *Noctua* are practically absent from my list of captures. Rannoch had not escaped the general drought of the past summer, and only one day during my stay could be called even damp; but there was a good deal of dull grey weather with dense mist on the hill-tops, and

boisterous gales from the westward, raising quite a respectable "sea" on the Loch, and preventing anything from flying in exposed places. On several such days, indeed, it was scarcely possible to find a single insect on the move; though on fine days, of which there was a fair proportion, Rannoch fully sustained its reputation for numbers of individuals if not of species of insects. Especially this was the case with the *Diptera*, at least of the representatives of that Order, with whose company one would gladly dispense. The "midges" and *Tabanidæ* were the most ferocious I have ever encountered, and made one's life a burden when collecting in sheltered places; while the abundance and pertinacity of the *Muscidæ* in the Black Wood brought the "plague of flies" of North-West Australia vividly to my recollection.

Many of the most characteristic species of beetles had evidently been "over" for a long time. Thus, I did not see a single *Longicorn* in the open, except one *Strangalia 4-fasciata* brought in by Dr. Mc Callum on August 1st; there were no *Elateridæ* to be found, except *Cryptohypnus riparius* and *Athous niger*; practically no *Telephoridæ*, no *Ips*, and no *Cryptocephali* whatever. The sweeping-net produced nothing better than odd specimens of *Malthodes* of two or three species, *Antherophagus pallens*, *Hydrocyphon*, *Anthonomus comari*, &c.; and beating the small birch and alder trees was not more productive, *Antherophagus testaceus*, *Luperus rufipes* and *flavipes*, *Coccinella 16-guttata* (not rare), *Podabrus alpinus*, *Deporaus megacephalus*, and *Polydrusus tereticollis*, being almost the only species obtained in this way. *Dorytomus costirostris* came very rarely off aspen, and *Dascillus cervinus* off the heather, rather commonly.

There was abundance of fallen timber, logs, and stumps of Scotch fir in the Black Wood and elsewhere, as well as many decayed birch trees on the hill sides and along the glens; but nearly all of it was in the most weatherbeaten state, with the bark, when any remained, dropping off from age, and it was rarely that a tree could be found in workable condition. The celebrated saw-mill yard at Dall, in particular, looked as if no work had been done there for years, and all that could be found in it on several visits were the three local species of *Liodes*, which were plentiful in snuff-like fungus on old sawdust and stumps; *Cerylon histeroideus* and *ferrugineum*, *Ernobius mollis* (very large), *Otiorrhynchus maurus*, and a few *Quedionuchus lævigatus*. This last-mentioned Staphylinid, which, with the exception of *Baptolinus alternans*, was the beetle most regularly found under loose bark, fully lived up to its reputation for activity, but in this respect it was equalled, if not excelled, by *Quedius xanthopus*. Of this species I

took a fine series under the very dry loose bark of a number of felled larch trees on the north shore of the Loch, in company with *Rhizophagus nitidulus* (rare), *Calathus micropterus* (in plenty), &c.; *Q. lateralis* was found, with some rather puzzling forms of *Q. mesomelinus*, under logs in the Black Wood, where *Rhyncolus chloropus* was common in old fir stumps, and *Cis punctulatus* in fungoid growth under fir bark. *Pytho depressus* was not observed in the perfect state, but its curious horny-looking fork-tailed larva was common enough, and I found a few pupæ, which unfortunately did not produce very satisfactory specimens. After a constant and unsuccessful search for that special Rannoch Longicorn, *Acanthocinus ædilis*, I thought myself lucky to find four specimens in a small fir log on my last visit but one to the Black Wood; but the larva, and the very curious pupa, were constantly in evidence. I brought back several of the latter, but they seemed too delicate to bear removal from their singular nidus of wood-fibre under the fir bark; and the two or three perfect insects reared happening to come out together when I was away from home promptly proceeded to devour each other. With the pupæ of *Rhagium indagator*, which were rather common, I had somewhat better success.

In a small saw-pit on the Struan road, a little more than a mile from Kinloch, was some tolerably fresh timber, and one pine log yielded me a short series of the pretty wood-borer, *Trypodendron lineatum*—not obtained without difficulty, as it drills neat round tunnels two inches and more deep, perpendicular to the surface of the wood, and sits in them hinder end outwards, ready to retreat far out of reach at the least alarm. The common *Myelophilus* and *Hylastes* were here in swarms, with a few *Tomicus acuminatus*; and under the looser bark I found *Nudobius lentus* (2), *Leptusa analis*, *Homalium pineti* (not rare) and *pusillum*, *Rhizophagus ferrugineus* and *dispar* in plenty, and one or two *Thanasimus formicarius*. Not far off were the only two recently felled fir trees I could find during the whole of my stay, and by beating the cut-off tops of these I obtained *Cryptophagus cylindrus*, *Ernobius nigrinus*, *Pissodes pini* (common) and *notatus* (rare), *Magdalis phlegmatica*, *Pityogenes bidens*, *Pityophthorus pubescens* (*micrographus*, Brit. Cat.) in plenty, &c. Several of these species, with *Salpingus castaneus* in numbers, were also beaten out of the broken-off top of a large Scotch fir in the Black Wood.

Decayed birch was less productive, but from a half-dead tree near Carie I got one of my best finds, *Epuraea silacea*, unfortunately only singly; the same tree yielded *Orchesia micans* (most of which escaped by means of their well-developed powers of jumping), *Triplax*

russica in fungoid growth, with numbers of its larva, &c. One *Carida flexuosa* was also found on decaying birch, also *Cis Jacquemarti*, and *Sinodendron* under the loose bark, where I saw one elytron of the rare *Athöus undulatus*.

A *Cossus*-infested birch tree in the Black Wood, kindly pointed out to me by Mr. W. Reid, proved a great attraction for *Cetonia floricola*, of which only a single specimen was taken elsewhere on bracken. On one occasion I saw at least twenty of the *Cetonia* busily imbibing the flowing sap, in a space which could be covered by one hand. *Soronia punctatissima*, larger and darker than southern examples, was very abundant in this tree, with a few *S. grisea*, *Thamiaræa cinnamomea* and *hospita*; and in the "frass" at its foot two or three examples of the dark type-form of *Xantholinus tricolor*, so different from the large light coloured variety I have been accustomed to take at the seaside in the south, were met with.

I should have been greatly disappointed to miss *Trichius fasciatus*, as well as *Acanthocinus ædilis*, and was just not too late for the former species, of which three specimens were seen and two taken flying over heather bloom in the Carie glen on July 29th; the resemblance of this pretty insect on the wing to a small humble-bee was very striking at first sight.

The summit of Meall-a-Phuill or Gharbhavel ("Grayvel")—the traditional locality for the great Coleopterous prize of Rannoch, *Amara alpina*—was too far from Kinloch to admit of my reaching it and returning the same day, and a projected ascent from Camghouran fell through; but I worked hard, without result as far as this beetle is concerned, on all the hills nearer to my head-quarters, including "Beinn-a-Chuillaich" (2925 feet), "Carn Mearg" (3419 feet), and the "Big Ben" of the district, Schiehallion (3547 feet), all considerably higher than "Grayvel." The famous view from the summit of Schiehallion was limited by the mist on the day of my ascent to about five yards, and the top of the mountain being scarcely more than a pile of loose frost-riven rocks, very little life, either animal or vegetable, was present; but about halfway down I found a single specimen (unfortunately not quite perfect) of the very rare *Oxyptoda longipes*, Muls., under a stone in a damp grassy place. The usual hill *Carabidæ*, etc., were apparently much more plentiful on steep well-drained slopes at about 2000 to 2500 feet elevation than on the actual summits, where the black mountain form of *Carabus catenulatus*, and (rarely) *Patrobus septentrionis* were almost the only species met with. At the more moderate heights I found *Nebria Gyllenhali*, *Calathus melanocephalus*

WILLIAM WATKINS, Entomologist, EASTBOURNE.

**FINEST STOCK of LEPIDOPTERA, COLEOPTERA, &c.
IN THE KINGDOM.**

Collections continually arriving from the least known localities, containing new and scarce species. Prices to suit all buyers.

Selections carefully and cheerfully sent for choice anywhere here or abroad.

Healthy larvæ and Pupæ; a large stock always on hand.
LISTS FREE.

ENTOMOLOGICAL APPARATUS AND CABINETS.

Best articles ONLY. See numerous Testimonials.

Collectors abroad respectfully reminded that the most liberal Cash Prices are always paid for desirable species.

Most complete Reference Collections for naming. Terms on application.

General Catalogue, 80 pages, Free.

The Practical Scientific Cabinet Makers.

J. T. CROCKETT & SON

(Established 1847).


Makers of every Description and Size of Cabinets, Cases, Store
Boxes, Apparatus, and Appliances,

And Dealers in all kinds of Specimens for Entomologists, Botanists,
Ornithologists, Geologists, Mineralogists, Numismatists, Conchologists, &c.,
and for the use of Lecturers, Science Teachers, Colleges, Students, &c.

MUSEUMS FITTED AND ARRANGED.

Specially made Cabinet for Birds' Eggs and Skins. The Drawers
graduate in depth, and are all interchangeable.

ALL BEST WORK. ESTIMATES GIVEN.

 All Goods at Store Prices. Great advantages in dealing direct with the Makers.

Send for Full Detailed Price List before ordering elsewhere.

7a, PRINCE'S STREET, CAVENDISH SQUARE, LONDON, W.

Factories — 34, RIDING HOUSE STREET and OGLE STREET, W.

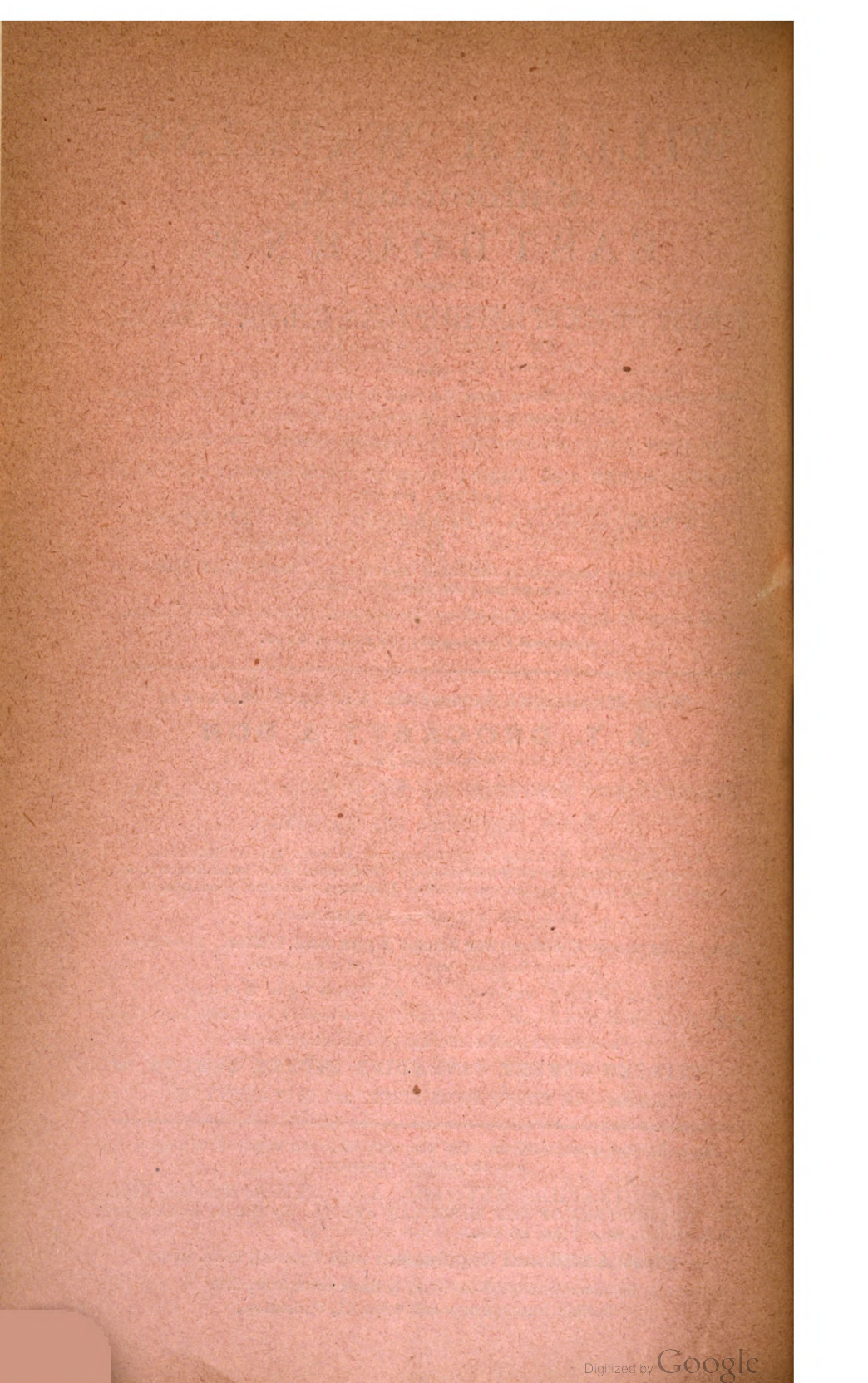
*Complete in one thick volume, royal 8vo, with 59 plates engraved on copper
from the author's drawings :*

**A MONOGRAPHIC REVISION AND SYNOPSIS OF THE
TRICHOPTERA OF THE EUROPEAN FAUNA.** By ROBERT MCLACHLAN,
F.R.S., F.L.S., &c. Price, £3 10s.

First Additional Supplement (with 7 plates), Price, 8s.

London : GURNEY & JACKSON, 1, Paternoster Row, E.C.

Berlin : FRIEDLÄNDER und SOHN, 11, Carlstrasse.



CHANGE OF ADDRESS.

J. J. WALKER, from 23, Ranelagh Road, Sheerness, to H.M.S. Katoomba, Sydney, N.S.W.

WANTED.—A gentleman residing in London, who collects during the summer, will be glad to hear from persons who can SET WELL in the British style. The specimens would be delivered alive or fresh killed. Pyrales, Pterophori, and Crambi a speciality. No Micros. Terms very liberal. Apply in writing to— **Mr. J. GANDER, Marlin Square, Abbot's Langley, Herts.**

LARGE STOCK OF LEPIDOPTERA AND COLEOPTERA
from all parts of the world. Prices low. Catalogues on application to
HERMANN ROLLE, Naturhistor. Institut, Berlin N., Elsasser-Str., 47/48.

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the
Session 1899–1900:—

Annual, Wednesday, January 17th, 1900.

Scale of Charges for Advertisements.

Whole Page£2. Half Page£1 1s. Quarter Page12s. 6d.

Lowest charge, 3s. 6d. up to 5 lines; 6d. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-; Plain Ring Net, 1/3, 2/-, 2/6; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 4/-, 5/-, 6/-; Zipc Pocket Boxes, 9d., 1/-, 1/6, 2/-; Setting Boards, from 6d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/4 per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/-.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6, 2/-, 2/6 per pair; Pocket Lens, from 1/- to 8/-.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6. Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Braas Blow-pipe, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 1/- each; Botanical Vascuum, 1/6, 2/9, 3/6, 4/6, 7/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

**** Now ready**—The Exchange List and Label List compiled by Mr. Ed. Meyrick, B.A., F.Z.S., F.E.S., according to his recent Handbook of British Lepidoptera. Exchange Lists, 1½d. each, 8d. per dozen, or 4/- per 100; Label Lists, 1/6 each.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 2s. 6d.

SHOW ROOM FOR CABINETS, &c.

ONLY ADDRESS—

**36, STRAND, W.C., Five Doors from Charing Cross,
LONDON.**

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (66 pp.) sent post free to any address on application

CONTENTS.

PAGE

Great flight of <i>Colias Edusa</i> in the West of Ireland.— <i>Rev. C. T. Cruttwell, M.A.</i>	1
<i>Bacotia sepium</i> , Spr., in the New Forest, with notes on its characters.— <i>T. A. Chapman, M.D., F.Z.S.</i>	2
Revision of the Nomenclature of Micro-Lepidoptera (continued).— <i>Rt. Hon. Lord Walsingham, M.A., LL.D., F.R.S., and J. Hartley Durrant, F.E.S.</i>	4
Occurrence of <i>Zelleria phillyrella</i> , Mill., in Ireland.— <i>C. G. Barrett, F.E.S.</i>	4
Concerning <i>Teratopocus maculipennis</i> , Reuter, with notes on the brachypterous condition in females of <i>Psocidæ</i> .— <i>R. McLachlan, F.R.S.</i>	6
Large Colonies of Ants in New Zealand.— <i>W. W. Smith, F.E.S.</i>	7
<i>Batodes angustiorana</i> , Hw., feeding on grape pulp.— <i>Eustace R. Bankes, M.A., F.E.S.</i>	9
Re-discovery of <i>Nyssia zonaria</i> in the Hebrides.— <i>C. G. Barrett, F.E.S.</i>	9
Notes on the earlier stages of <i>Sesia bombylifomis</i> .— <i>W. R. Jeffrey</i>	10
<i>Dinarda dentata</i> : a reminiscence.— <i>J. W. Douglas, F.E.S.</i>	11
<i>Phytosus spinifer</i> at Scarborough.— <i>J. Harold Bailey, M.B.</i>	11
<i>Homalota puberula</i> , Sharp, and other Coleoptera at Chesham.— <i>E. Geo. Elliman</i>	11
Variation of <i>Throscus dermestoides</i> , L.— <i>G. C. Champion, F.Z.S.</i>	12
Coleoptera at Richmond.— <i>Prof. T. Hudson Beare, D.Sc., F.R.S.E., &c.</i>	12
Aculeate Hymenoptera at Stoborough Heath and Wareham, Dorset.— <i>G. A. J. Rothney, F.L.S.</i>	13
Aculeate Hymenoptera at Birmingham, &c.— <i>Ralph C. Bradley</i>	13
Hymenoptera and Hemiptera at Harting, Sussex.— <i>Saunders, F.L.S.</i>	14
A striking instance of neural variation in a <i>Psocid</i> .— <i>R. McLachlan, F.R.S.</i>	14
<i>Hemerobius limbatellus</i> in Surrey.— <i>C. A. Briggs, F.E.S.</i>	14
Local and rare Diptera taken in the New Forest, 1899.— <i>F. C. Adams, F.Z.S.</i>	14
REVIEWS.—Report of the Government Entomologist (Cape of Good Hope) for the year 1898	15
General Index to Miss Ormerod's Reports: by Robert Newstead, F.E.S.	15
OBITUARY.—John Brooks Bridgman, F.L.S. (supplementary).— <i>Claude Morley, F.E.S.</i>	15
Frederik Maurits Van der Wulp.— <i>G. H. Verrall, Pres. E.S.</i>	16
SOCIETIES.—Birmingham Entomological Society	17
South London Entomological, &c, Society	17
Lancashire and Cheshire Entomological Society	19
Entomological Society of London	20
Coleoptera and Lepidoptera at Rannoch.— <i>J. J. Walker, R.N., F.L.S.</i>	21

DR. STAUDINGER & BANG-HAAS, BLASEWITZ-DRESDEN,
in their new Price List, No. XLIII, offer more than 15,000 species of well-named LEPIDOPTERA, set or in papers, from all parts of the world, in finest condition; 1300 kinds of PREPARED LARVÆ; numerous LIVING PUPÆ, &c. Separate Price Lists for COLEOPTERA (20,000 species); HYMENOPTERA (3000 species), DIPTERA (1900), HEMIPTERA (2000), ORTHOPTERA (1000), NEUROPTERA (550).

PRICES LOW.

DISCOUNT FOR CASH ORDERS.

NOTICE TO SUBSCRIBERS.

Vol. X, Second Series (1899), ended with the last Number. Subscriptions, 6/- (POST-FREE) for 1900 are now due. Post Office or Postal Orders may be sent to the Editors, 1, Paternoster Row, London, E.C., or to either of them personally at his residence. The Subscription for all foreign countries is now the same as that for the United Kingdom.

Intending new Subscribers should send in their names and addresses as soon as possible.

Those who have not yet remitted their Subscriptions for the current Vol. (1900) are requested to do so at their early convenience

FEB 14 1900

Second Series, No. 122.]
[No. 429.]

FEBRUARY, 1900.

[PRICE 6d.]

14,005

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

LORD WALSINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. XI.

[VOL. XXXVI.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,
Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6.
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

“NATURE,”

A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE. PRICE 6d.

“NATURE” contains Original Articles on all subjects coming within the domain of Science, contributed by the most eminent scientific writers of the day. It also contains Reviews of all recent scientific works; Correspondence Columns, which form a medium of scientific discussion and of intercommunication among men of Science; Accounts of the leading Scientific Serials; Abstracts of the more valuable papers which appear in foreign journals; Reports of the Proceedings of the Principal Scientific Societies and Academies of the World; and Notes on all matters of current scientific interest.

SUBSCRIPTIONS TO “NATURE.”

	£	s.	d.		(To all places Abroad).	£	s.	d.
Yearly	1	8	0	Yearly	1	10	6	
Half-Yearly	0	14	6	Half-Yearly	0	15	6	
Quarterly	0	7	6	Quarterly	0	8	0	

Money Orders to be made payable to **MACMILLAN and CO., Ltd.**

Office: **St. Martin's Street, London, W.C.**

var. *nubigena* (with the type form), *Bradycellus collaris* and *placidus*, and *Patrobis assimilis*, all fairly common, and more rarely *Cychnus rostratus*, *Pterostichus æthiops* (locally not scarce on the heights above the Allt Druithe burn) and *vitreus*, *Miscodera arctica* (one only), *Cymindis vaporariorum*, *Calodera æthiops*, *Homalota tibialis*, *Ocypus brunnipes*, *Arpedium brachypterum*, *Otiorrhynchus maurus* (nearly over) and *rugifrons* (on Schiehallion), &c. *O. blandus* sometimes occurred on the highest summits, but was much more abundant under small stones on the Loch side within five minutes' walk of the hotel, with *O. muscorum*, rarely. Here, too, *Staphylinus stercorarius* asserted its claims to be regarded as a Myrmecophilous beetle by being found on several occasions in a small nest of *Myrmica ruginodis* under a stone, the ants resenting my intrusion by stinging with a degree of virulence worthy of their tropical relatives.

On the way to the Black Wood, *Serica brunnea* was often very common on the road, with occasional examples of *Carabus glabratus*, *Calathus piceus*, *Amara bifrons*, *Taphria nivalis*, *Geotrupes sylvaticus*, *Adimonia tanaceti*, &c. One or two late specimens of *Cicindela campestris* were observed, and by dint of a good deal of "log rolling" in the Dall sawpit I got a small series of *Trechus rubens* in its old station, in company with *Clivina collaris*. Nothing better than *Bledius subterraneus*, and one or two *Bembidium tibiale*, was to be found in sandy places on the shore of the Loch.

In sheep- and deer-dung were found the usual *Aphodii*, viz., *lapponum* in great plenty, often nearly or quite black, and occurring up to the highest elevations; *fætidus* and *putridus*, both common; *depressus* and *sordidus*; also *Tachinus proximus*, *pallipes* and *flavipes*. Carrion was not often met with, and produced only a few common *Histers* and *Cholevas* (including what is probably *C. coracina*), *Necrophorus ruspator*, also taken flying in the Black Wood, *Philonthus proximus*, *carbonarius* and *puella*. I could not muster up sufficient resolution to attack any of the numerous and thriving nests of *Formica rufa* in the Black Wood and elsewhere, but once found *Myrmedonia humeralis* accompanying the ants which were busy about a dead rabbit.

The water-net was occasionally used, but produced no single species worthy of mention, and very few of even the commoner forms of water-beetles; and a similar want of success attended the examination of *Sphagnum* and other mosses at various elevations.

Turning now to the *Lepidoptera*, eleven species of butterflies were observed during my stay, of which *Pieris brassicae* and *napi* call for no special remark, except that the ground colour of the females of

P. napi was rather more creamy in tone than in southern examples. To one who in all his wanderings had never yet seen a true *Erebia* on the wing, the first sight of *E. epiphron* on July 26th, flitting in a stray gleam of sunshine over the grass and heather on the slopes above the Allt Druithe Burn, was indeed a pleasure. Very few specimens were seen on this occasion, but on the 31st I met with it again a long way up the Innerhadden Burn, this time in fair numbers, but usually worn to a mere shadow, though improving perceptibly in condition as one ascended higher up the hillside. The nature of the ground it frequents, joined to a habit it has of flying uphill when pursued, makes the capture of *E. epiphron* not always an easy matter on a hot day. Its congener, *E. æthiops*, was out locally in great abundance and superb condition, among the long grass and bog-myrtle by the roadside, on the north shore of the Loch on August 2nd, when Dr. McCallum and I each took a long series. I found it in equal numbers, but showing evident signs of wear in the males at least, in the better known locality near Camghouran a few days later. *Cænonympha Typhon* was widely distributed in wet heathy places at moderate elevations, but was evidently long past its prime, though enough fresh specimens were taken to furnish a nice series; and *C. Pamphilus*, which was common, attracted attention from its much clearer and yellower tone of colour than that of southern examples. *Vanessa urticae*, too, was noticeably larger and brighter than in the south, and was common enough along the roads; and *Argynnis Selene* still lingered, in passable condition, on the heaths. *A. Aglaia* was first seen on July 26th, and soon became common, though its active habits, and the rough winds which prevailed just as it was coming out, did not permit it to remain in good condition for many days. The specimens taken were altogether larger, darker, and richer in appearance than those from the Kentish chalk hills, the females especially so. I noticed one or two *A. Aglaia* flying vigorously at a height of nearly 3000 feet. But the most interesting butterfly was without doubt *Lycæna Icarus*. Even on the wing the superior size and brightness of the males, as compared with southern examples, at once caught the eye, and the females were truly magnificent, some of them half as large again as average Kentish examples, and in nearly all cases strongly suffused with bright shining blue, the dark ground colour often reduced to a narrow well-defined border, and the orange marginal spots unusually conspicuous. In many of the females, too, the discoidal spots were plainly marked on the upper-side, and conspicuously margined with white; while quite ten per cent. of both sexes were to be referred to the var. *icarinus*, Scriba, in which the

basal ocelli of the fore-wing beneath are obsolete. A beautiful selected series, chiefly taken in the evening and on dull days at rest on rushes, &c., in a boggy place on the bank of the river Tummel close to Kinloch, was secured; and in the same spot *L. Artaxerxes* was met with sparingly, and was also found flying with *Erebia æthiops*.

Among the *Bombyces*, belated and probably ichneumonated larvæ of *Orgyia fascelina* were now and then seen on the heather, and those of *Lasiocampa rubi* (young), *quercus* var. *callunæ* (full grown), and *Saturnia carpini*, were fairly plentiful. On the last day of my stay, while I was beating alder for *Melanthia rubiginata* var. *plumbata*, something fell with quite a startling thump on the grass, and proved to be the first larva of *Endromis versicolor* which I had ever seen; it was full-fed, survived the journey to Sheerness, and is now safely in the pupa state. Very small larvæ of *Notodonta dromedarius* were often beaten from the same tree, and those of *Cymatophora* or from aspen, while on birch I found one or two larvæ of *Acronycta leporina*. *Agrotis strigula* (*porphyrea*) flew commonly over the heather, but was invariably too much worn to be worth taking; a few fine examples of *Stilbia anomala* were disturbed during the day in rocky places at Carie and elsewhere, *Plusia chrysitis* turned up in the hotel, and *P. interrogationis* was frequently seen on the moors, usually going like the wind over the roughest places, and only one specimen in tolerable condition was caught.

Of the Geometers, *Ellopiæ fasciaria* and *Boarmia repandata* were met with in the Black Wood, but in every instance in the last stage of dilapidation. *Dasydia obfuscata* was widely distributed, and in good condition when found, but was decidedly scarce; the first specimen seen being fished out of a pool of water into which it had just fallen, very little to its detriment. Of *Geometra papilionaria* I saw two fine examples, taken by two collectors from Yorkshire who were on a flying visit to Kinloch. *Acidalia fumata* was nearly over, and hard to obtain in good order, but on my arrival the very local *Fidonia pinetaria* was just in its prime in its head-quarters at the Black Wood, but it did not remain long in good condition. The males flew briskly, even on dull days, over the great clumps of its food-plant, the red whortleberry, *Vaccinium vitis-idaea*, from which the more sedentary female might be disturbed. The genus *Larentia* was much in evidence, and included *L. cæsiata*, very plentiful at all elevations except the highest, and very variable in colour and marking; *ruficinctata*, to whose locality I was kindly introduced by Mr. Reid, occurred sparingly on an outcrop of metamorphic limestone on the flanks of Schiehallion,

where the pretty little fern, *Asplenium viride*, grew in plenty in the crevices in which *L. ruficinctata* delighted to ensconce itself; *salicata* was represented by one worn specimen, *olivata* was fairly common, as well as *pectinataria*, and *didymata* was a perfect nuisance everywhere. *Emmelesia blandiata* was quite worn out, but *ericetata* was in good condition and common, but rather local in heathy places. Among some alders about a mile from Kinloch, *Melanthia rubiginata* was abundant and fine, the interesting var. *plumbata* occurring in fair numbers with the ordinary form; and the only *Melanippe fluctuata* which I took was a fine example of the dark var. *neapolisata*, Mill., which is apparently not rare at Rannoch. *Coremia munitata* was fairly common on Schiehallion and elsewhere, chiefly along the course of the burns; *Camptogramma bilineata*, *Cidaria russata* and *immanata* were all plentiful, and presented no striking variety, but some exceedingly fine dark and intermediate forms of *C. populata* were taken in the Black Wood and by the Innerhadden Burn, among *Vaccinium*. Dark and finely marked specimens of *Eubolia pulumbaria*, *E. limitata* (*mensuraria*) and *Anaitis plagiata* were secured, and on August 7th the pretty *Carsia paludata* (*imbutata*) was first seen on the hills behind Carie, apparently just coming out, in rough places where the *Vaccinium vitis-idaea* grew in stunted patches among the heather, and was common enough the next day, although not very easy to catch. *Scopula alpinalis* was not rare rather higher up, especially at Innerhadden, and *Crambus margaritellus* and *dumetellus* were obtained, the former chiefly in the Black Wood; and a large *Scoparia*, apparently to be referred to *S. scotica*, B. White, taken at an elevation of 2500 feet on Schiehallion, concludes my list of captures at Rannoch.

23, Ranelagh Road, Sheerness:
October 7th, 1899.

COLIAS EDUSA IN IRELAND IN 1899.

BY THE REV. W. W. FLEMING, M.A.

Mr. Cruttwell's note (*ante* p. 1) respecting the great number of *Colias Edusa* which he observed on the coast of Galway last August is very interesting. The great point of interest is the fact that all the butterflies he saw were males.

Mr. Cruttwell is not the only entomologist who observed this strange fact. The "clouded yellow" appeared in this neighbourhood in some numbers last year; generally speaking it is very uncommon. I captured five specimens, and saw about three times that number.

All that I caught were also males. Mr. Bonaparte Wyse had a similar experience in other parts of this county ("Irish Naturalist," 1899, p. 228), and at Passage West, Co. Cork.

It is difficult to account for such a sudden increase, and I think more difficult to understand why the butterflies that three observers noted should have all been males.

If the butterflies that Mr. Cruttwell and others observed in such unusual numbers reached our shores by migration, where did they come from?

My own idea is that *Colias Edusa* owed its presence in the Co. Galway, and in other parts of Ireland, not to migration, but to some climatic conditions or exceptional circumstances that favoured its rapid increase last year. An exceedingly dry and warm summer, like that of 1899, a probable absence of insect and other enemies, and the fact that other parts of the county might not have afforded such a good feeding ground as the place where Mr. Cruttwell observed them—these things might have caused them to congregate in such numbers in that particular locality. *Colias Edusa* is exceedingly powerful on the wing, and is therefore able to change its quarters very readily. That strip of flowery meadow (mentioned by Mr. Cruttwell) must have proved an irresistible attraction, and a haven of rest to every passing *Edusa*. But why all should have been knights errant seems to me quite inexplicable.

Coolfin, Portlaw, Co. Waterford :
January, 1900.

ON A NEW FORM OF *AGRIAS SARDANAPALUS*, BATES.

BY PERCY T. LATHY.

AGRIAS SARDANAPALUS, Bates, ab. *HADES* (ab. nov.).

Differs from ab. *lugens*, Stgr., in the total absence of blue on the hind-wings.

Hab.: Chanchamayo. In coll. H. J. Adams.

A single specimen of this interesting form was obtained, together with typical *lugens*, from a large collection from Chanchamayo in Peru. Dr. Staudinger, in his Revision of the genus *Agrias*, Iris, Band xi, Heft 2, fig., p. 363, says of his ab. *lugens*, that the blue is never entirely absent from the hind-wing. Another specimen from the same parcel closely approaches this form, the blue patch being only represented by a few scales.

Lynton Villa, Sydney Road, Enfield :
January, 1900.

ON THE LARVÆ, HABITS, AND STRUCTURE OF *LITHOCOLLETIS CONCOMITELLA*, BANKES, AND ITS NEAREST ALLIES.

BY JOHN H. WOOD, M.B.

These notes are intended to supplement the paper by Mr. Bankes which has recently appeared in this Magazine. It may be as well to state at the outset that the close relationship which is so noticeable in the imagos, and which has placed such obstacles in the way of a ready recognition of the species, extends equally to the larvæ, both as to appearance and economy, so that until we come to consider the male genitalia, we do not reach absolutely trustworthy ground.

THE LARVA.

Disappointing as the comparison of the special larvæ may be, their *general* life-history on the other hand, is full of interest. We open the first mine that comes to hand, it is fully formed we may be sure, or it would not have caught our eye. There is nothing startling, it is true, about the appearance of the larva—there it rests on the floor of the mine, common-looking enough and well set up upon its legs; but had we opened this same mine in its earliest and inconspicuous state, before the leaf had become arched or distorted, there would instead have met our view an ugly, helpless-looking object, extremely flattened, with a huge thorax out of all proportion to the rest of the body, apparently without legs, and altogether as unlike an ordinary Lepidopterous larva as it is possible to conceive. But to describe it more precisely:—the head, half-buried within the first thoracic segment, and lying in exactly the same plane as the body, points directly forwards; it is small, very flat and thin, owing to the general dorso-ventral compression, triangular in shape, and furnished with large protruding jaws. The thorax tapers rapidly posteriorly; its first segment is gigantic, both as regards length and breadth, and projects widely on each side of the head. The abdomen is rather short, and of nearly uniform breadth. All the segments, both thoracic and abdominal, are deeply divided and much flattened, the usual hairs being short and inconspicuous. The legs, which might readily be overlooked, are merely minute protrudable processes; those of the thorax are particularly insignificant, and quite devoid of any grasping power. The head is pale brown, with the mouth parts darker, and the body white. So general is the white ground-colour at this stage that so far I have met with only a single exception, and this happens to be one of the species we are considering, namely, *concomitella*, in which the colour is slightly yellowish. Markings are usually

absent, not even an indication of the thoracic plate being discoverable; but the rule is not invariable, since there are a few species, such as *coryli*, *corylifoliella*, and *nicellii*, in which the back is ornamented with a series of twelve large, black, square-shaped spots, a type of marking common to many sorts of mining larvæ, Coleopterous as well as Lepidopterous. Removed from the mine, it is a most helpless creature—it has no idea of crawling, all it can do is to shift its ground slightly and in a spasmodic sort of way by an alternate extension and contraction of the segments. Placed on its broad and flat back, it is unable to right itself.

This semi-footless condition is retained until the leaf has been undermined to the full extent required, by which time the larva is ready to lie up for its third moult, out of which it comes, to all appearance, a new creature. It is not only that fully formed legs make their appearance, armed—the true legs with claws and the claspers with hooklets—but the whole aspect is altered. The flattened form has been exchanged for a cylindrical one, the great predominance of the thorax is gone, though the first segment still remains rather the largest in the body, the hairs are long and conspicuous, and the head, plump and of good size, now assumes the ordinary position, with the mouth directed downwards. The transformation is startling, and at the same time ushers in a new set of activities. In place of the arduous work of cutting and wedging a way beneath the skin of the leaf, the larva now turns to and feeds at leisure upon its substance, the mine having been converted into a roomy chamber by the contraction of the silk, which it was the first business of the larva under the new conditions to throw across the separated cuticle or roof from side to side. One more moult remains, the fourth and last. It is with this moult that the various shades of colour and the blackening of the plate and legs are acquired, which serve, so far as they go, to differentiate the species. Thus, there are in all four moults, the first two connected with the true mining life, the third or transformation moult, and the fourth or feeding-up moult.

To come now to our own particular group: the mature larvæ are semi-transparent and yellow, with grey or blackish heads, chiefly due to a broad dark stripe down each cheek, red mouth parts, a grey or blackish tinge on the thoracic plate, and grey-spotted legs. The intestine with its contents is plainly visible, but reduced in the full-fed larva to so narrow a strip by the encroachment over it of the fat-masses that it might reasonably be thought to be the dorsal vessel. The changes rung upon these several characters lie within such narrow

limits that it could serve no useful purpose to describe each of the eight or nine species separately, for it would merely be a case of "a little more" here, or "a little less" there. Nevertheless, they are to some extent distinguishable, and it would be strange were it otherwise. I fancy I could always pick out *sorbi* and *oxyacanthæ* from among their congeners (leaving out of account the continental *cydoniella*, which I have not seen). They are the most colourless of the lot; in both the ground colour is pale yellow, the head very pale grey, the thoracic plate untinged with grey, and the legs unspotted. I well remember Mr. Bankses sending me a supply of his pear mines in the autumn of 1895. On opening some of them I came upon one larva which I felt confident from its general pallor was that of *oxyacanthæ*, and the opinion was amply confirmed the following spring, when among a fine series of *pyrivorella* there emerged a few undoubted *oxyacanthæ*, as ascertained from the male genitalia. Mr. Bankses tells me that Frey, treating of *oxyacanthæ*, describes a very different larva, he says: "The head is distinctly heart-shaped, black, comparatively large. The colour of the body is dirty white, lighter on the last two segments. On the 2nd segment there is a black spot, shining, and divided by a pale line. The alimentary canal is visible, and appears brownish, and the true legs are black." Surely some error must have crept in here, the larva of *Ornix anglicella* having been mistaken for that of the *Lithocolletis*. If the two species just mentioned are the palest, *cerasicolella*, on the other hand, is the most highly coloured form; the head is black, the plate dark grey, almost blackish, the legs distinctly spotted, and the ground-colour yellow. *Spinicolella* is very similar, but the shade of black as a rule is not quite so deep. The special character of *mespilella* and *pyrivorella* is the contrast in colour between the fore-part of the body and the hind-part, the thorax being white and the abdomen yellow. The head is blackish, the plate grey, and the legs spotted, but the colouring is usually some shades lighter than in the corresponding parts of *spinicolella* and *cerasicolella*. Between the two species themselves I can see no difference. *Concomitella* and *blancardella*, the apple species, are also indistinguishable from each other. In the colour of their heads and plates they are lighter than the *mespilella* pair; the legs are only faintly spotted, occasionally even unspotted. Their distinctive character is a tinge of orange in the ground-colour, though I have seen the same kind of tint in *mespilella* when feeding in a yellowing leaf of *Pyrus torminalis*. The ground-colour is probably given by the fat-masses, and these are influenced to some extent by the food. An

interesting point which this brief review of the larvæ has brought out is, that the eight British species seem to arrange themselves in pairs.

THE MINES AND COCOONS.

In a state of nature the mines are invariably found on the under-sides of the leaves; but on one occasion having sleeved some *mespilella* on a pear shoot, the moths became to some extent puzzle-headed (owing perhaps to the novelty of the food-plant), and deposited a portion of their ova on the upper-side of the leaves, in which position the mines were subsequently found. For their shape and position the mines probably depend much more on the size and character of the leaf than on the particular species of larva. One general law seems to guide the larva, which is, that directly it meets with one of the principal ribs, it takes it for a base line and runs its mine alongside, by this means ensuring that the long axis of the mine is in the direction of the ribs, the importance of which for facilitating later on the contraction of the mine is obvious. Herein I believe lies the secret which will explain most of the diversities of the mines. In large leaves with prominent ribs the mines lie in the interspaces, and according as the interspace is wide or narrow, do one or both ribs act as the guide or boundary; of the narrow interspace and its slender overlong mine the leaf of the cherry (*Prunus avium*) is an example, whilst the wild service (*Pyrus torminalis*) illustrates the wide interspace and shorter and broader mine. On the other hand in a small leaf like the leaflet of the mountain ash (*Pyrus aucuparia*) the midrib becomes the base line, and the mine is confined to one or other lateral half. The ribs, however, do not always determine the matter, for in all those instances in which the mine is situated on the edge of the leaf, the latter becomes the base line. With most of the species this position is accidental, but it is the rule with *oxyacanthæ*; for this insect uses the lobes of the hawthorn leaf, usually only the tips, and follows their outline most accurately. All the mines have the sides well drawn in, and are kept scrupulously clean, the frass being collected into one large heap, placed generally near the centre, but in those of *oxyacanthæ* and *spinicolella* at one end. As regards size, the mine of *oxyacanthæ* is distinctly small, a single lobe of the hawthorn leaf or even one of its leafy stipules sufficing, and so too for so large a species as that of *pyrivorella*, due probably to the close texture of the pear leaf, the mine of *spinicolella* again is small; in the others it is fairly large. But there is plenty of variety, and a collection of *blancardella*, say, might readily be made of size as small as one of *oxyacanthæ* selected on the opposite principle.

When ready to spin up the larva finds the ground already half prepared for it. The frass is out of the way, collected into one large heap, whilst the contraction of the mine by the early drawing in of its sides has narrowed the cavity to the requisite dimensions. All therefore that remains for the larva to do is to spin a diaphragm just in front of the frass heap, line the chamber, so cut off, with silk to make it weather proof, and throw some strands across the front end for the support and guidance of the pupa as it breaks through on the emergence of the moth. Commonly the silk lining is none too abundant, and in pulling a mine open the leafy wall and the silk lining part along the same line, so that there is little appearance of a cocoon as distinct from the cavity of the chamber. In *mespilella* and *pyrivorella*, however, the lining is much thicker, and instead of tearing it peels off from the wall of the chamber and has all the look of a cocoon. Of the greater quantity of silk these two species have at their disposal we have further proof in those occasional instances where, from lying across instead of along an interspace, the mine fails to contract and the chamber remains over wide. If it be one of the apple species, the larva uses up its supply of silk in a vain effort to draw the mine in, and having none left for a special cocoon is obliged to pupate in this roomy and comfortless space; whereas *mespilella* or *pyrivorella* in a like predicament spin a separate and substantial cocoon distinct from the chamber. *Spinicolella* and *cerasicolella* also construct distinct cocoons (Entomologist's Record, x, 168-70). These two species stand so plainly outside the *concomitella* group where lay the problems to be solved, that they did not seem to require the same minute treatment, and I neglected to note the extent to which they make themselves cocoons. This deficiency Dr. Corbett's valuable note has enabled me to supply, yet after all it is only a question of degree, for they all make cocoons, and on identical lines, out of one end of the mine. *Oxyacantha* generally lines its pupal chamber with yellow silk, but occasionally with white, which is the colour of the lining in the other species. No other peculiarities that I can discover are shown by any of the species, and in size, position and general structure there is a singular uniformity about the pupal chambers, so different to what we find in some other sections of the genus. The autumnal broods of *spinicolella* and *cerasicolella* hibernate full-fed, those of the *concomitella* group pupate immediately. The moths emerge by the under-side of the leaf, with the exception of *sorbi*, whose rule is to come out through the upper-side.

(To be continued).

ON *PROUTIA SALICOLELLA* (AUCT.) = *ANICANELLA*, BRUAND.

BY T. ALGERNON CHAPMAN, M.D., F.Z.S.

As one result of our recent studies of the Psychids, Mr. Tutt has proposed the new genus *Proutia* for *betulina* and *salicolella*, two species hitherto included in the genus *Fumea*. Unlike *Bacotia sepium*, also removed from *Fumea*, which is very remotely, if at all, allied to the latter genus, these two species, in their larval structure and the forms of their cases, are tolerably close to *Fumea*.

They differ chiefly in their antennal structure, which is that of *Bacotia* and *Epichnopteryx*, and not that of *Fumea* and *Psyche*, viz., the antennal pectinations have sensory hairs on all surfaces and are unscaled; they also have the anterior tibial spurs neither so short as in *Bacotia* and the Micro-Psychids, nor so long as in *Fumea*; they also have a more pointed wing than *Fumea*, therein resembling Micro-Psychids.

The female as compared with *Fumea* has more numerous joints to the antennæ (over 11), and the tarsi have a diminished number of articulations, this is also the case, however, in some *Fumea*. The two distinctive items in the female moth are, that there are certain transparent spots on the dorsal plates of the abdominal segments, and that the moth always carries with it the pupal head covering, which remains attached to the imaginal head, and the imaginal antennæ are not, as a rule, withdrawn from the pupal antennal coverings.

This is a character that attaches *Proutia* in some degree to *Epichnopteryx*, it is, indeed, so curious and unusual a character that considerable weight in this regard no doubt belongs to it. I have seen several *Fumea* females with the pupal head parts attached, so that *Fumea* has clearly not escaped this tendency, still in *Fumea* it is very unusual, and one might say pathological, as it occurs only rarely and in individuals of species that have no such habit, and there are usually with the head parts some other pupal parts not symmetrically from both sides.

Proutia betulina, Zell., is a well known species on the continent, readily obtainable through the usual channels. As a British species the specimens I have seen taken by Mr. Mitford and recorded in magazines and elsewhere are unquestionably *betulina*, and Mr. Whittle has recently found the larvæ in Essex.

When we come to *salicolella* matters are decidedly more obscure. I have not succeeded in obtaining a good continental specimen; one sent me by Staudinger is probably *salicolella*, but it is without an-

tenuæ, and he accompanies it with a query as to whether *salicolella* is a good species. I have not succeeded in coming across one of the *salicolella* taken by Mitford, the one in Dr. Mason's collection is, as noted by Mr. Barrett, *betulina*: so the matter would, so far as I am concerned, have remained a blank, had not Mr. Prout bred a male and female this year from cases collected at Epping. Now all I am prepared positively to assert about these specimens is, that they are *Proutiæ*, and are abundantly distinct from *betulina*, and that they agree fairly well with the specimen sent me by Staudinger. I have only seen one other specimen of the same species; this is in Dr. Mason's collection, and is one of four specimens labelled *betulina*, the other three are *betulina*; it is not of Mitford's setting. I see no reason to doubt its being a British specimen.

These *salicolella* differ from *betulina* in being smaller, rather more round winged, a little paler in colour perhaps, and structurally in having 26 instead of 21 joints to their antennæ. The female differs in having the clear spots on the abdominal plates on segments 3, 4, 5 and 6, instead of on 2, 3, 4 and 5 as in *betulina*.

So much for facts: here is a *Proutia* certainly distinct from *betulina*; is it *salicolella*, Bruand?

It is necessary, in order to determine satisfactorily how this matter stands, to deal with Bruand's three species *roboricolella*, *anicanella* and *salicolella*.

Heylaerts identifies *roboricolella* with *betulina*, Zell. This seems to be incorrect, as Bruand states that it makes a case with straws, and that it is the *nitidella* of the Paris Museums and of Godart and Dup. We have in England adopted the name for the darkest specimens of our commonest *Fumea*, and Bruand says it is the commonest of the genus round Paris. So far, then, Heylaerts seems to be in error, and *roboricolella* is not a *Proutia* (*betulina* or other), but a *Fumea*. But, then, Bruand describes the female as having white anal wool. Heylaerts is no doubt right in regarding this character as definitely *Proutian*. I have not seen any *Fumea* female with white wool, as white wool is understood in *Proutiæ*. Some *Fumeæ* have it very pale, but still it is brown or tinted and not white.

There can be little doubt, then, that *roboricolella*, Bruand, as regards the male, represents our commonest South of England *Fumea*. Whether, as regards the female, we are to suppose that Bruand made some error of specimens and got *betulina* ♀ amongst his *roboricolella*, or was not too careful as to the precise tint he should describe as white, I am unable to guess.

When we consider his *anicanella* and *salicolella* I come to a conclusion that differs from that usually accepted, and from the synonymy proposed by Bruand himself. He says his *anicanella* is equal to *betulina*, Zell. and Speyer, but adds "*in litteris*," so that it seems very probable he had deficient material for collating his names with Zeller's. Speyer, he says, sent him two specimens labelled *betulina*, Zell. Did Bruand fail to compare them carefully, or had Speyer the two species mixed, as may readily happen, and sent to Bruand examples of *salicolella* (auct.), (non Bruand) ?

However this may be, I make no doubt that under the name of *salicolella* he describes the species we know as *betulina*, Zell., and that his *anicanella* is the one that I have before me as *salicolella*, and that we are supposed to know under that name.

There is one difficulty in reversing the names or in leaving them alone, viz., that Bruand distinctly describes the anal tuft of his *salicolella* as *brun-jaunâtre clair*, that of the one ♀ bred by Mr. Prout is nearly as white as that of *betulina*, if not absolutely snowy, therefore, the colour given by Bruand is as difficult to accept for *salicolella* as for *betulina*. Bruand does not appear to have had many specimens of either species, and I incline to think he got some of his female specimens misplaced.

Betulina, Zell., is larger, darker, and has more pointed wings than *salicolella*, auct. Bruand makes *salicolella* 1 mm. more in expanse than *anicanella*; *anicanella* he likens to *roboricolella* (*nitidella*); *salicolella* has the wings narrower and longer: he further says that it much resembles *tabulella* (*sepium*), the wings much more lengthened than in *roboricolella*. The resemblance between *betulina* and *sepium* males is very close indeed, and this point alone is almost sufficient to identify *salicolella*, Br., with *betulina*. Another point clearly shown is that *anicanella*, Br., is much rarer than *salicolella*, Br., which again corresponds with the relation of *salicolella*, auct., to *betulina*, Zell., or may refer to *sepium*. The antennæ he says are very lightly pectinated, this character is Proutian rather than specific.

The description of the larva of *roboricolella* is rather of a Proutian than a Fumeid, whilst that under *salicolella* is rather that of *sepium*. I am strongly inclined here to suggest that Bruand got some of his material mixed in relation to these three species. His figure of *salicolella* is certainly not our *salicolella*, but might easily be *betulina* or *sepium*; whilst his figure of the larva is clearly that of *sepium* and not of a *Proutia*.

Bruand's figures of neuration rather support my conclusions, his

three figures of *roboricolella*, *salicolella* and *tabulella* are all probably *betulina*; *roboricolella* certainly is, *salicolella* and *tabulella* might be either *betulina* or *salicolella* (auct.), but neither of them is *sepium* (*tabulella*). Further proof is hardly required to show that Bruand had got his *specimens* here inextricably mixed at the time he prepared for publication; but that he had before him, when he worked them out, four species, and knew them well at some of their stages seems almost equally certain. He does not give the neuration of *anicanella*.

But taking his account of the ♂ imagines as being least likely to be in error, as being also that which must be decisive in a case of doubt, his *salicolella* is *betulina*, Zell., and partially perhaps *sepium*, and his *anicanella* is the one we mean when we talk of *salicolella*, and is the species represented by Mr. Prout's bred examples, by Dr. Mason's example of uncertain but doubtless British origin, and by the remains of a specimen sent me by Dr. Staudinger.

This portion of the synonymy would therefore be—

BETULINA, Zeller (Speyer?).

salicolella, Bruand.

roboricolella, Bruand (*pars.*).

ANICANELLA Bruand.

salicolella, auct., *nec* Bruand.

SEPIUM, Zeller.

tabulella, Bruand.

salicolella, Bruand (*pars.*).

The only alternative I see to this is that *salicolella*, Bruand, is a lost and unknown species, and our *salicolella* is a n. sp., which is highly improbable.

Betula, Reigate:

November 27th, 1899.

HOW TO REAR NYMPHS OF DRAGON-FLIES, &c.

BY JAMES G. NEEDHAM, PH.D.

(Extracted from the Bulletin of the United States National Museum, No. 39).

The best way to rear nymphs is to let them rear themselves. Locate them, collect a few from time to time to watch their growth, preserve the young ones for specimens, and do not take any for rearing until about grown. Their development can be gauged by the length of the wing cases. For species that seem common, and that live in accessible places, there is no advantage in early collecting; they will seem to become more common as the season of their

transformation approaches, because, first, they get larger and are more readily seen; and, secondly, they approach the margin of the water and are more easily taken.

The best rearing device is the one that keeps its inmates under conditions most nearly natural. A cage for aquatic insects that hardly disturbs such conditions at all consists of a cylinder of galvanized wire screen, open at both ends, having a loose screen cover with a rim of heavy wire. One end of the cylinder is pushed down into the mud of the bottom in shallow water, the cover is laid on and all is ready. Such a cage merely incloses a small water area with its natural vegetation, and nymphs placed inside live their natural lives and obtain for themselves their accustomed food. Of course the size of the mesh must be adapted to that of the insects to be reared—small enough to confine them and large enough to admit their prey. Fifteen inches is a convenient height.

For burrowing nymphs it will be necessary to set the lower edge of the cage down into the mud of the bottom 2 or 3 inches; this is easily done with a garden trowel.

It is better, owing to danger from freshets, not to plant such a cage in the rapids in the direct course of a stream, but to divert a small arm of the stream behind some sheltering rock or log, place the cage there and build miniature rocky rapids inside it. In quiet waters no such precautions are necessary, but where the rise and fall of the water level is great it may be necessary to move cages sometimes. In general, it is better to hide the cages among vegetation, away from the eyes of the untutored and irreverent. For aquatic insects which pupate on land a cage is easily planted half in the water and half out.

Nymphs placed inside will readily crawl up the sides to transform. Young imagos should be taken out as soon as convenient after transformation is completed (otherwise some will fall into the water and die before they are mature) and placed in paper bags with their exuviae until dry and well coloured.

Collectors will find it convenient to have cages of this sort made up in "nests" to fit one inside the other, the size of the mesh decreasing with the size of the cage. A nest of a dozen such cages and covers will be found a slight transportation incumbrance.

One may wish to take nymphs far from their natural habitat and to rear them at home with no streams or ponds near. A simple breeding cage that may be used successfully under such conditions consists of a rough wooden kit, or pail, or tub, or half barrel, with a

loose screen cover. It must be rough inside, so that the nymphs can crawl up its sides. It should be half filled with water, the nymphs put in, and some trash with them for them to cling to, the cover added, and the whole set in a place where it will not get overheated and yet will receive the direct rays of the morning sun. Conditions will be less natural in such a cage as this, but if only nymphs which are well grown and require little or no food are put into it, it will be found entirely satisfactory.

A very satisfactory way to rear some of the smallest and most delicate species of dragon-flies and may-flies, species requiring well aerated water, is to place the nymphs in shallow, flaring dishes of unglazed pottery before an open screened window in one's room. The water will need to be renewed daily or oftener, because of the rapid evaporation, but it will keep very sweet; and the imagos emerging will go at once to the screen and stay there, and the danger of their falling into the water before maturing and dying is obviated.

TENTHREDOPSIS THORNLEYI, KONOW, A NEW SAW-FLY
(BRITISH).

THE BY REV. F. D. MORICE, M.A., F.L.S.

Among a number of *Tenthredinidæ* which the Rev. A. Thornley, of South Leverton (near Lincoln), has from time to time sent to me for determination, both sexes have more than once occurred of a *Tenthredopsis* which I was unable to identify. A year or more ago I sent a pair of them to Pastor Konow, and he was inclined to think them new, but required more material before pronouncing positively. This I have supplied to him from later "sendings" of Mr. Thornley; and he has now published in Karsch's *Entomologische Nachrichten*, 1899, p. 362, a full description of *Tenthredopsis Thornleyi*, n. sp.

Mr. A. A. Dalglish has sent me the same insect from the neighbourhood of Glasgow; Mr. Thornley's specimens are from his own district; and Herr Konow records it also from Ulm, in South Germany.

Tenthredopsis Thornleyi, Konow, is a very darkly coloured and rather small species (long., 9—10 mill.). It seems to resemble a good deal that described by Mr. Cameron in his *Monograph* as *tristis*, Steph., but the latter is said to have a yellow line on the pronotum, and also on the basal segment of the abdomen, white trochanters, and fuscous hinder tarsi, whereas in *Thornleyi* the pronotum and basal segment of the abdomen seem to be always quite black, the trochanters whitish, but black-spotted, and the tarsi rather conspicuously ringed with white before the apex

(a character which I have also often noticed in specimens of *T. Coqueberti*). Mr. Dalglish has sent me Scottish insects coloured quite according to Cameron's description of *tristis*, and representing, I have little doubt, that species. But all Mr. Thornley's specimens differ from these as stated above, and the females at least show a rather greater uniformity of coloration than is usual in this very variable genus.

Mr. Cameron describes further *T. caliginosa*, Steph., as very like *tristis*, but with the pronotum, the basal segment of the abdomen, and the trochanters, black; in his fourth volume, however, he seems to agree with Konow in sinking this as a variety of *cordata*, Fourcr. (now identified by Konow with *litterata*, Geoffr.). In any case *caliginosa* cannot be identical with *Thornleyi*, as the former species has the 3rd antennal joint "much longer than the 4th," while in *Thornleyi* ♂ it is scarcely as long, and in *Thornleyi* ♀ only a little longer.

Another species much resembling the present insect is *T. spreta*, Lep., Steph. (= *obscura*, Knw., olim.); Herr Konow, however, points out that *Thornleyi* is smaller, the head much narrower, the vertex without a central sulcature, the second recurrent nervure not interstitial, the dorsal surface of the abdomen (♂) differently sculptured, and the 8th dorsal segment in the ♂ differently impressed, having two foveæ separated by a sharp carina, which are not membranaceous, and coloured like the rest of the segment.

Brunswick, Woking:

January, 1900.

Nysia zonaria in the Hebrides.—*Nysia zonaria* (cf. ante, p. 9) is abundant on the "machars" (sandy pastures) along the western coasts of the Outer Hebrides. The larvæ have occasionally a curious habit of climbing to the top of the shoots of *Galium verum* there, and swaying about as if on purpose to attract attention. They seem to feed by preference on *Lotus*.

I took *Anarta melanopa* and *Crambus furcatellus* this last season on one of the highest hills in Harris. I had never found either species in the Hebrides before.—ARTHUR F. GRIFFITH, 59, Montpellier Road, Brighton: January 4th, 1900.

Argynnis Niobe, var. *Eris*, taken in England.—As I entertain no doubt that the specimen of this rare butterfly, which I discovered last autumn in the collection of the Rev. A. P. Waller at Bridgwater, was captured in this country, I think it ought to be recorded. Unfortunately, both the locality and date are uncertain. It was taken by Mr. Waller's brother about 1879, either in a wood near Bury St. Edmunds, or in Monk's Wood, Hunts. Mr. Waller thinks he took it at Bury St. Edmunds; he recollects taking fritillaries at that time in both localities, and that he took one that had no silver spots on the under-side; he supposed it to be a variety of *A. Euphrosyne*, but took no steps to identify it. He never collected any-

D

where out of England, and the whole of his collection was made by himself. It was quite a small one, and a few years ago he gave it to his brother, who also had taken no steps to identify the insect since it came into his possession. I brought the specimen to London, and at the Natural History Museum identified it. I afterwards showed it to Mr. Barrett, who confirmed the identification. The specimen is well marked, set to show the under-side, and, except for the loss of one antenna, is in good condition.—ARTHUR COTTAM, Elderscroft, Watford: January, 1900.

[In giving publicity to the foregoing note, we do so with all reserve. Of the *bona fides* of all concerned there is not the slightest doubt. Supposing no error of memory to have occurred, there is still the objection that the insect may have resulted from an imported pupa and escaped.—EDS.]

Some common Lepidoptera in North Devon, 1899.—At the beginning of August there were more butterflies on the wing than I have ever seen in this country. *Pieris brassicae* swarmed everywhere, often flying in clusters. *P. rapa* was also abundant, but not to such an unusual extent. *Epinephele Janira* was only a degree less prevalent than *P. brassicae*, nearly all I saw were tattered and torn. *Lycæna Icarus* was also more abundant than usual. *Pararge Aegeria*, which has been getting commoner for several years past, was also abundant, but I attribute this to the growth of some young plantations in a previously exposed country. *Vanessa Atalanta* and *Io* were both common; *V. cardui* scarce. Odd specimens of *Colias Edusa* and *Hyale*, and also of *Melanargia Galathea* (the latter, so far as I know, new to the district), were reported. The swarms of “whites” and “meadow-browns” disappeared in a few days, but the summer will be long remembered by the number of *Macroglossa stellatarum*. *Sphinx convolvuli* only put in one appearance at the tobacco flowers. *Stenopteryx hybridalis* was even commoner than usual.—G. B. LONGSTAFF, Morthoe, N. Devon: December 15th, 1899.

Parasitic Hymenoptera, &c., near Ipswich in October.—When searching for more *Cecilius atricornis* (cf. Ent. Mo. Mag., Nov., 1899, p. 272) I worked the same wood diligently on October 7th, 13th, and 14th, several interesting things were taken:—A few *Lissonota sulphurifera*, Grav., both typical form, and Holmgren's var., “*coxis et trochanteribus rufis*.” This is always, I believe, found late in the year; Gravenhorst took it at the end of September, and I have found it here, through September and October up to November 9th (1895). *Pimpla graminellæ*, Schrank: the posterior coxal punctures are very distinct. The difficult genus *Pezomachus* was, of course, well represented in such a locality, the commonest species being *P. bellicosus*, Först., which I have not before found in Suffolk, with *P. intermedius*, Först., *P. fasciatus*, Fab., and *P. corruptor*, Först. Several other *Ichneumonidæ*, some of which I expect to be ♂♂ of *Pezomachus*, also occurred. *Lagynodes pallidus*, Boh., which I had not taken before, though I have received it from Plymouth, Brockenhurst, Lyndhurst, Southampton, Guestling, Highgate, &c., was common, with the superficially similar *Megaspilus halteratus*, Boh. The only other Proctotrypids I recognised were *Codrus apterogynus*, Hal., of which a couple of ♀♀ occurred on the 7th, and *Diapria conica*, Fab., which was not uncommon. *Blacus armatulus* represented the Braconids, and several of the pretty, brachy-

pteroous, *Micromelus pyrrhogaster*, the Chalcids. There were few *Coleoptera* of note, the best, perhaps, being *Psammæchus bipunctatus*, *Psylliodes dulcamarae*, *Nanophyes lythri* (new to the District), and *Ceuthorrhynchus melanostictus*. *Elachyptera brevipennis* and several other small *Diptera* were by no means rare.

In the same wood on November 4th, 1897, I swept several *Stenus bifoveolatus*, *Psylliodes picina*, *Erirrhinus festuca*, and numbers of *Aphihona cærulea*, which last is still abundant, together with a single *Pezomachus pedicularius*, Fab., and *Proctotrypes aculeator*, Hal.—CLAUDE MORLEY, Ipswich: October 15th, 1899.

Sympetrum Fonscolombii, Selys, in Alderney.—On July 11th Mr. E. D. Marquand sent me a dragon-fly which he had captured in the island of Alderney a day or two previously. I at first thought it was a variety of *Sympetrum striolatum*, but Mr. R. McLachlan kindly informs me that it is a fine mature female of *Sympetrum Fonscolombii*. Mr. Marquand saw about half a dozen specimens, but having a very small net with him at the time, only succeeded in capturing one.

This is the only dragon-fly recorded from Alderney, although the Rev. F. A. Walker saw one on the wing in 1897, which he thought was *Libellula quadrimaculata*.—W. A. LUFF, Mount Pleasant, Guernsey: January, 1900.

[The example is a fine characteristic female, so mature that the ventral surface has become pruinose. Supposing the other examples seen to have been of the same species, it is pretty certain that a migratory swarm had crossed over from the French coast.—R. McL.]

Psocida on the wing: a query.—Will any observer state how many, and what species of *Psocida* he has seen *voluntarily* on the wing? I have often thought over this matter, and can recall to mind only one species, and that nearly the smallest of all winged *Psocida*, by which I of course mean *Cæcilius (Pterodela) pedicularius*, L. On calm hot days in autumn this may be seen almost anywhere in countless myriads, rivalling swarms of *Aphides*, the atmosphere appearing full of iridescent specks as the tiny wings catch the sun. As to other and larger species the record seems a blank. Let any one try to induce a winged *Psocid* on a tree-trunk or paling, or in the net, to enter a box or tube, and note the difficulty. It will run with extreme rapidity, it will dodge round slight inequalities of surface, and almost the only means of persuading it to go where you wish is by jerking it into the receptacle by a grass stem or something of that kind. At such times it will, when hard pressed, occasionally take wing, but only for a few inches, and in a downward (or dropping) direction rather than upward. It has been suggested that the flight is nocturnal, but so far as I am aware no proof of this has ever been brought forward. I am alluding to European forms. But is it different in the tropics? Years ago I interrogated Bates as to the habits of the large and brilliant *Thyrsophori*. He said they ran about rapidly and “sunned themselves” on leaves, but he had not seen them on the wing.—R. McLACHLAN, Lewisham, London: October, 1899.

Carcinops 14-striata, Steph., in a London bakehouse.—Through the kind intermediary of Mr. F. Milton, Mr. E. C. Bedwell and I recently had an evening's collecting in a bakehouse at Old Ford. The staple *Coleoptera* here were *Alphitobius*

diaperinus and *Gnathocerus cornutus*, both of which were in large numbers, while two specimens only of *Tenebrioides mauritanicus* were met with. The baker was so kind as to pull up for us a partly-loosened board forming part of the floor close to the oven, the evil-smelling black soil under which was, he informed us, largely composed of stale "German yeast." In this material I was so fortunate as to find three specimens of *Carcinops 14-striata*, Steph. There is one previous, but very ancient, record of this little Histerid from the London district, namely, "Battersea Fields" (Stephens), and the species is an addition to Mr. H. Heasler's more modern and admirable MS. List of London Coleoptera, compiled for the City of London Entomological Society, which comprises upwards of 1600 species, and is limited to a 10 miles radius from Charing Cross, and to records dating from 1880. It is hoped that this List may be published later in some form, but want of funds at present prevents its being issued as a separate work.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N. : *January 17th*, 1900.

Reviews.

BRITISH DRAGONFLIES (ODONATA): by W. J. LUCAS, B.A., F.E.S. Pp. 356, large 8vo, with 27 coloured plates and numerous text figures. London: L. Upcott Gill. 1900.

We cordially welcome this long-expected book, and hope and believe it will do much to further a knowledge of our very limited dragon-fly fauna. But for the sake of the many we wish it had come before us in a less expensive form. In "get up" it is an *ouvrage de luxe*, large type, wide margins, fine paper, &c., &c., albeit with an ugly binding. On one point the work stands prominently forward, that is in the amount of information (and also figures, mostly original) on the early stages of the insects; we can recall no other faunistic book on the subject in Europe in which this is so much detailed: the eggs are figured for nine species. The preliminary part is good, but the tables for genera and species (pp. 57—61) leave much to be desired, being too much based on colour characters; and we scarcely find any allusion to the genitalia of the second segment in the ♂, which, in *Sympetrum* especially, should have been diagrammatically figured (in the comparison between *S. striolatum* and *S. vulgatum*, p. 73, no mention is made of these, yet they furnish what is practically the one reliable character). Beyond the tables there is no division into families or genera, and the species follow on without breaks. The general plan is as follows for each species:—Synonymy (mainly limited to British works), a copy of the original description, Size, Male Imago, Female Imago, Immature Colour, Variation, Egg, Nymph, Date, Migration, Habits, Distribution. This last (Distribution) seems unnecessarily extended in the case of species found practically everywhere, and will prove embarrassing when a second edition is required. A few words might have been devoted to extra-British distribution, for an intelligent interest is springing up in dragon-flies by tourists and others, and it affects the matter of migration. The descriptions are full and carefully written; the addition of a few more *structural* details here and there would have improved them. And now as to the Plates, for these are likely to be more frequently consulted than the text. They, as a whole, are excellent, and should, save in a few critical cases, enable the collector to determine his

captures with certainty, and they have for the most part been drawn from fresh examples. Those for the *Æschninae* are practically perfect (save for *Æ. isosceles*, for which only old materials were available). A very trifling outlay would have still further enhanced their value. The *sides* of the thorax should have been figured for *Sympetrum*, *Æschna*, *Agria*, &c., and figures should also have been given for the dimorphic females of *Ischnura*, and for the whitish form (often the most common) of *Platynemis*. One plate, that devoted to the two species of *Ischnura*, is indifferent: the pale blue (or bluish-white) annulus near the apex of the abdomen (differing in position according to the species), so conspicuous in the living insect, is barely discernible. The figure of the female of *Oxygantra Curtisi* seems to have been taken from a very lightly-coloured individual.

The author admits 39 or 40 British species (he seems to waver in the case of *S. striolatum* and *S. vulgatum*), whereas seven others are alluded to as "Reputed British." Some of these latter probably got into our lists through absence of locality labels; but others have certainly occurred here in one or more specimens (and still more are likely to do so), and it is difficult to draw the line between the rights of such species as *S. Fonscolombii*, of which a large migratory swarm occurred a few years ago, and *S. meridionale*, known only by one or two very old specimens, but which *may* have formed part of a swarm.

The writer of this notice calls attention to the fact that the example of "*Sympetrum vulgatum*" from Desvignes' collection, *cf.* p. 72, is identical with that of *S. Fonscolombii* mentioned at p. 71, and that the error was corrected in Ent. Mo. Mag., *xx*, p. 253.

The book has been well seen through the press, and the few errors are mainly corrected at pp. 332—333, though some, mostly topographical, remain.

A short chapter on "Preparation" concludes the work. In this we rejoice to see that the author recommends *flat* setting boards with *square* grooves.

We have made no allusion to the sequence adopted for the species. It is not that which we would now follow, but this is a matter of comparatively small importance.

We congratulate Mr. Lucas on having produced a useful work that we hope will soon require a second edition. It does not obviate the necessity for a small *scientific* "Synopsis," nor would the one in any way clash with the other.—
R. McLACHLAN.

THE HYMENOPTERA OF SUFFOLK. Part i, Aculeata: by CLAUDE MORLEY, F.E.S. With Map. 8vo, pp. 22. Plymouth: J. H. Keys. 1899.

Mr. Morley has published under the above title an excellent list of the Suffolk *Aculeata*. Suffolk as a county is always interesting in the eyes of Hymenopterists, as the collecting ground of the Rev. W. Kirby and the few Entomologists who assisted him in gathering materials for his Monograph of the British Bees. We have to thank the Rev. E. N. Bloomfield, as we are told in the first few lines of the preface, for much of the labour involved in the compilation of this list, and no doubt for its original conception. A record of a little more than two-thirds of the entire number of species known to inhabit the United Kingdom is undoubtedly good for one county, and yet among the rarer species, besides those predicted by the author, there are probably several which will be found some day. Among the ants *Ponera*

and *Formicozenus* are quite likely inhabitants of the county, and the absence of *Formica fusca*, race *cunicularia*, is hard to account for. Among the Fossors *Tiphia minuta*, *Calicurgus hyalinatus*, *Pseudagenia punctum*, *Cerceris quadricincta*, *Crabro signatus* and *Panzeri* are all possibilities. In the *Diploptera* there are only seven not recorded, of which *Odynerus laevipes* and *melanocephala* are the only species which can be said to be likely to occur. Among the *Anthophila* we should expect *Prosopis Masoni* to turn up, and as *Halictus prasinus* and *xanthopus* appear in the list, their corresponding *Sphecodes*, *reticulatus* and *spinulosus*, may hopefully be looked for. *Halictus brevicoeps*, *Andrena humilis*, *analis*, *lucens*, and *niveata*, the little new species recently introduced into our list, may reasonably be expected to exist in the county. In the *Apidæ* the list is extraordinarily full, and *Melecta luctuosa* seems to be the only species which could reasonably be suggested as a possible addition to reward the ardour of collectors. The list is very free from printer's errors, *Didineis unicornis* (should be *lunicornis*) being the only serious one. Mr. Morley may fairly be congratulated on the way he has done his work.—E. S.

PRACTICAL HINTS ON THE FORMATION OF A COLLECTION OF COLEOPTERA :
by J. J. WALKER, R.N., F.L.S., &c. (Extracted from the "Transactions of the South-Eastern Union of Scientific Societies for 1899." Pp. 18—35, 8vo).

We make no apologies for calling prominent attention to this very useful paper, because there are few, if any, better entitled than its author to write on the subject, and also because it is likely to escape the notice of some of those interested, for it is not all who see the "Transactions" of the recently established "South-Eastern Union," but all Coleopterists beginning work should certainly do so, if they cannot procure a separate copy of the paper. The amount of information crammed into these closely printed 18 pages is very great. Advanced workers will read it with interest; but it is of course mainly intended for the "beginner," and its great feature is its many-sidedness; there is scarcely any point, even of collateral importance, that does not receive attention. The same genuine enthusiasm and geniality in style so conspicuous in all others of Mr. Walker's writings is abundantly evident, with here and there humorous allusions. Such an article as this should be published in pamphlet form, and sold at a low price.

Obituary.

Richard Henry Meade, F.R.C.S., &c., died at his residence at Bradford on December 23rd, 1899, in his 86th year. He was the son of the Rev. Richard Meade, of Princes Risboro', Buckinghamshire, and was born in 1814. Destined for the medical profession, he was apprenticed at Bedford Infirmary, and afterwards studied at St. Bartholomew's, where he formed a life-long friendship with Sir James Paget, a fellow-student, whom he predeceased by only a few days. He became M.R.C.S. in 1836 and F.R.C.S. in 1845. For a time he appears to have been in practice near London, and also Lecturer on Botany at St. Bartholomew's. But in 1840 he succeeded to a surgical practice at Bradford, which became much extended, and he obtained a high reputation in that branch of the profession in Yorkshire: he also held several important public professional appointments, and for twenty years was a J.P. As a man of high character and distinct personality he will be much missed up north.

As a naturalist he appears to have commenced by writing on *Arachnida* in the "Annals and Mag. Nat. Hist.," in 1854. In 1855 he produced a "Monograph of the British *Phalangida* or Harvestmen" and a supplement thereto in 1861; also papers on the spiders of coal mines, &c., some of which appeared in the "Zoologist." Then, from some cause, probably pressure of professional work, he seems to have written next to nothing on entomology or allied subjects for fully ten years. But in the meantime he was amassing material in British *Diptera*, of which Order he had a wide general knowledge. The difficult and obscure *Muscida* (in the broad sense) became his speciality, and he was regarded as an authority thereon. Nearly the whole of his writings on *Diptera* appeared in this Journal from 1875 down to last year, when he published his paper on *Cordylurida*, which was barely finished before his last illness. He attacked the *Anthomyiida*, *Sarcophagida*, *Tachinida*, &c. A generic paper on North American *Anthomyiida* appeared in 1878. In 1897 he published separately "A descriptive list of British *Anthomyiida*," which was a second edition of his List in this Journal in 1881-3. We have heard Mr. Meade's work in *Diptera* condemned as not being sufficiently in advance of the time. From its style we think he never intended it to be more than tentative. He cleared the ground for future workers; he acquired a large amount of knowledge in a difficult and little-worked group; and he elected to let his fellow-students have the benefit of it, rather than allow it to die with him: and it should not be forgotten that much of his work was done at an age of more than four score years! Mr. Meade leaves three sons and three (two unmarried) daughters; of the sons one is a surgeon at Bradford, one a clergyman, and the third an officer in the navy.—R. McL.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY : November 20th, 1899.—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Rev. C. F. Thornehill showed specimens of *Lycana batika* taken by Mr. Lowe in Guernsey, and said that there had apparently been a large immigration of the species to the island this year, as Mr. Lowe had taken about 80 in his garden, and seen many others; he also showed specimens of *Oporabia dilutata* from Calverhall, Salop, where he said all the specimens were of the same dark leaden colour, with but slight trace of the markings, and were much darker than those he had been in the habit of taking at Burton-on-Trent; and a series of *Cænonympha Tiphon* from Calverhall. Mr. R. C. Bradley, a long series of *Bombus hortorum* taken this year, and showing a wide range of variation, var. *Harrisellus*, in all three sexes from Droitwich, var. *subterraneus*, ♀ and ♂ only from his garden at Moseley, and various intermediate forms from different places. Mr. J. T. Fountain, a number of insects taken during the year at Acoc's Green, near to Birmingham, close to the buildings of the town, including *Leucania comma*, *Agrotis exclamations* (a variable series), *Anchocelis pistacina*, *Orthosia lota*, *Grammesia trigrammica*, &c. Mr. P. W. Abbott, *Lepidoptera*, all from Wyre Forest, and chiefly taken this year; they included *Agrotis cinerea*, some of the dark form which represents the species there, *Sesia culiciformis*, with one white banded specimen caught last year, and an orange banded one caught this year, with typical ones; *Oporina croceago*, including two specimens which were light brown in colour, no trace at all of the usual orange

colour showing; one specimen of *Neuria saponaria*, a new record for the district; bred series of *Asphalia videns* ♂, including a so-called black one; a series of *Cymatophora fluctuosa*, which he said he had got for the first time comparatively commonly, never having taken more than odd specimens there before. He also said that he had taken a specimen of *C. octogesima* there this year, which thus completed the list of this genus, all the species of which he had obtained in this one locality; also a bred series of *Sesia sphegiformis*. Mr. J. T. Fountain, a specimen of *Spilosoma menthastri*, which was alive, and had emerged from the pupa on November 17th; also a *Sirex gigas*, ♂, from a colliery at Walsall, where it had emerged from some wood at a depth of 800 yards beneath the surface at the beginning of October. Mr. G. T. Bethune-Baker showed Palearctic *Rhopalocera*, including the genus *Æneis*, and a number of the genus *Satyrus*; there was a series of *Æneis Aëlo*, and various Turkestan species, good series of *Satyrus Alcyone*, *Hermione*, *Circe*, &c. Mr. C. J. Wainwright showed a series of the handsome Dipteron, *Asilus crabroniformis* taken in Cornwall this year, a fine series of *Leptogaster cylindrica* from Herefordshire, where he had found it common, and various other Asilids, &c.

December 18th, 1899.—The President in the Chair.

Mr. Chas. Pumphrey, 5, Park Road, Moseley, was elected a Member of the Society.

Mr. Colbran J. Wainwright showed *Physocephala rufipes* from Cornwall, and other *Conopidae* and *Syrphidae*. Mr. P. W. Abbott, a series of *Nola cucullatella* from London, including two very dark ones. Mr. G. T. Bethune-Baker, a number of Palearctic insects of the genus *Satyrus*, *Semele* and vars., &c.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: November 23rd, 1899.—Mr. A. HARRISON, F.L.S., F.E.S., President, in the Chair.

Mr. Sich exhibited two specimens of *Platyptilia acanthodactyla* bred from larvae taken off *Geranium rotundifolium* at Chiswick; *Aglossa cuprealis*, showing extremes in size, and *Cucullia chamomilla*, Chiswick, 1899. Mr. F. M. B. Carr, *Sirex gigas* from Boldrewood, where several others had been seen, and numerous species taken at sugar at Wicken in June, and at Hailsham in August, at both of which times *Lepidoptera* were plentiful. Mr. R. Adkin, on behalf of Mr. Newman, a series of remarkable varieties: *Argynnis Paphia*, suffused with black; *Smerinthus tilia*, specimens with the central band reduced to a triangular blotch, and pale ground colour; *S. populi*, pinkish and dark forms; *Saturnia pavonia*, sub-diaphanous, bred the third year in pupa; *Pygara cross*, *curtula* + *pigra* (*reclusa*) bred, out of 120 specimens only three were males; and aberrant forms of *Arctia Caja*, *Lasiocampa quercus*, &c. Mr. R. Adkin read a paper, entitled, "More Lazy Days by the Sea," being stray notes on a short holiday at Eastbourne. He touched upon many subjects that had come under his notice, including the comparative abundance and scarcity respectively of the commoner species of butterflies, the effect of the unusually warm summer on some of the moths, an immigration of *Pieris rapae*, &c. Mr. Carpenter stated that he had examined numerous specimens of *V. cardui* in the spring, and found they were invariably females. He suggested, since he found no developed ova in them, that they were infertile, and that had they been paired they would not have emigrated.—H. J. TURNER, *Hon. Sec.*

WILLIAM WATKINS, Entomologist, EASTBOURNE.

—o—o—o—
**FINEST STOCK of LEPIDOPTERA, COLEOPTERA, &c.
IN THE KINGDOM.**
—o—o—o—

Collections continually arriving from the least known localities, containing new
and **scarce** species. Prices to suit all buyers.

Selections carefully and cheerfully sent for choice anywhere here or abroad.

Healthy Larvæ and Pupæ; a large stock always on hand.
LISTS FREE.

ENTOMOLOGICAL APPARATUS AND CABINETS.

Best articles ONLY. See numerous Testimonials.

Collectors abroad respectfully reminded that the most liberal Cash Prices are
always paid for desirable species.

Most complete Reference Collections for naming. Terms on application.

General Catalogue, 80 pages, Free.

The Practical Scientific Cabinet Makers.

J. T. CROCKETT & SON

(Established 1847),


Makers of every Description and Size of Cabinets, Cases, Store
Boxes, Apparatus, and Appliances,

And Dealers in all kinds of Specimens for Entomologists, Botanists,
Ornithologists, Geologists, Mineralogists, Numismatists, Conchologists, &c.,
and for the use of Lecturers, Science Teachers, Colleges, Students, &c.

MUSEUMS FITTED AND ARRANGED.

Specially made Cabinet for Birds' Eggs and Skins. The Drawers
graduate in depth, and are all interchangeable.

ALL BEST WORK. ESTIMATES GIVEN.

 All Goods at Store Prices. Great advantages in dealing direct with the Makers.

Send for Full Detailed Price List before ordering elsewhere.

7a, PRINCE'S STREET, CAVENDISH SQUARE, LONDON, W.

Factories—34, RIDING HOUSE STREET and OGLE STREET, W.

**SOUTH LONDON ENTOMOLOGICAL & NATURAL HISTORY
SOCIETY.**—February 8th, Dr. T. A. Chapman, F.Z.S., F.E.S. A Paper, "On
the Relation of the Larval to the Imaginal Legs in Lepidoptera." February 22nd,
General Exhibits and Short Notes. March 8th, Mr. W. J. Lucas, B.A., F.E.S. A
Paper, "Cockroaches: Natives and Aliens," with Lantern Illustrations. March
22nd, A Microscopical Evening. April 12th, Mr. J. W. Tutt, F.E.S., Editor of the
"Entomological Record." A Paper April 26th, A Lecture on Ornithology, illus-
trated by a magnificent series of Lantern Slides. May 10th, A Lecture, "Orchids,"
illustrated by the S. E. Union of Scientific Societies collection of Lantern Slides.
May 24th, Mr. E. Step, F.L.S. A Paper, Illustrated with the Lantern.

CHANGE OF ADDRESS.

EUSTACE R. BANKES, from The Close, Salisbury, to Norden, Corfe Castle, Wareham

EXCHANGE.

Wanted—Butterflies from the Pacific Islands, South Africa, and Madagascar. I offer fine examples of Diurni from N. and S. America, also N. American Coleoptera.—LEVI W. MENGEL, Boys' High School, Reading, Pa., U.S.A.

LARGE STOCK OF LEPIDOPTERA AND COLEOPTERA

from all parts of the world. Prices low. Catalogues on application to
HERMANN ROLLE, Naturhistor. Institut, Berlin N., Elsasser-Str., 47/48.

Scale of Charges for Advertisements.

Whole Page.....£2. Half Page.....£1 1s. Quarter Page.....12s. 6d.

Lowest charge, 3s. 6d. up to 5 lines; 6d. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

FOR SALE.—LARVÆ AND PUPÆ of very many of the
BRITISH LEPIDOPTERA; also fine and well-set specimens of BRITISH
LEPIDOPTERA—ACULEATE HYMENOPTERA—SAW FLIES—ICHNEUMONS—
COLEOPTERA—DIPTERA—HEMIPTERA—NEUROPTERA.

Preserved Pupæ, Pupa Cases, and Cocoons of Lepidoptera, &c.

For Price Lists, which are separate, apply to—

W. H. HARWOOD, Colchester

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-; Plain Ring Net, 1/3, 2/-, 2/6; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/-; Setting Boards, from 6d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/4 per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/-.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6, 2/-, 2/6 per pair; Pocket Lens, from 1/- to 8/-.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6. Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipe, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 1/- each; Botanical Vaseolum, 1/6, 2/9, 3/6, 4/6, 7/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

** Now ready—The Exchange List and Label List compiled by Mr. Ed. Meyrick, B.A., F.Z.S., F.E.S., according to his recent Handbook of British Lepidoptera. Exchange Lists, 1½d. each, 8d. per dozen, or 4/- per 100; Label Lists, 1/6 each.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 2s. 6d.

SHOW ROOM FOR CABINETS, &c.

ONLY ADDRESS—

36, STRAND, W.C., Five Doors from Charing Cross,
LONDON.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (66 pp.) sent post free to any address on application

CONTENTS.

PAGE

Prosopis palustris, sp. nov., an addition to the British Hymenoptera.—R. C. L. Perkins, B.A.	49
Three little-known British Aculeate Hymenoptera (Pompilus approximatus, Sm., Osmia parietina, Curt., and O. inermis, Zett.).—Edward Saunders, F.L.S.	51
Notes on certain Diptera observed in Scotland during the years 1898–99.—Col. J. W. Yerbury, late R.A., F.Z.S., &c.	53
List of the Coleoptera of Alderney.—W. A. Luff ...	57
A gall-making Coleophora (stefanii, de Joannis).—Rt. Hon. Lord Walsingham, M.A., LL.D., F.R.S.	59
A new species of Tortrix reported from Shetland.—John Hartley Durrant, F.E.S.	60
The forthcoming new edition of Staudinger's Catalogue.—Right Hon. Lord Walsingham and John Hartley Durrant	61
Tapinostola Bondii, Knaggs, in the north of France.—Eds.	61
Stilpnobia salicis on Hackney Marsh.—Selwyn Image, M.A., F.E.S.	62
Crambus hortuellus common in Holborn, London.—Id.	62
Aculeate Hymenoptera in North Wales.—E. B. Nevinston, F.Z.S.	62
Philanthus triangulum, F., in Kent.—Percy E. Freke, F.E.S.	63
Cardiophorus equiseti, Herbst, in Glamorganshire.—B. Tomlin, F.E.S.	63
Trigonogenius globulum, Sol., in Lancashire.—Id.	63
Coleoptera of the Liverpool district and in Denbighshire in 1899.—W. E. Sharp	64
The old British localities for Libellula fulva, Müll.—R. McLachlan, F.R.S.	65
REVIEWS.—A Monograph of the Coleopterous Families Corylophidæ and Sphæriidæ: by the late Rev. A. Matthews; edited by P. B. Mason	65
Proceedings of the Eleventh Annual Meeting of the Association of Economic Entomologists	66
OBITUARY.—William Blundell Spence, F.E.S.	66
Dr. Walter Battershell Gill, M.D., &c.	66
Prof. Emile Blanchard	67
SOCIETIES.—Birmingham Entomological Society	67
Lancashire and Cheshire Entomological Society	67
South London Entomological, &c., Society	67
Entomological Society of London	68
On the larvæ, habits and structure of Lithocolletis concomitella, Banks, and its nearest allies (continued).—John H. Wood, M.B.	69

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1900–1901:—

Wednesday, March 7th and 21st, April 4th, May 2nd, June 6th, October 3rd and 17th, November 7th and 21st, December 5th, 1900, and (Annual), January 16th, 1901.

THE "SAMUEL STEVENS" COLLECTION.

TUESDAY AND WEDNESDAY, MARCH 27TH AND 28TH.

MR. J. C. STEVENS begs to announce that he has received instructions from the Executors to Sell by Auction at his Great Rooms, 38, King Street, Covent Garden, on Tuesday and Wednesday, March 27th and 28th, the well known Collection of British Lepidoptera formed by the late SAMUEL STEVENS, Esq., the result of over 60 years' collecting and breeding, consisting of probably over 100,000 specimens, and amongst them some wonderful and exceptional varieties of a very large number of species, and a long series of many rare and extinct species too numerous to mention.

MAR 14 1900

Second Series, No. 123.]
[No. 490.]

MARCH, 1900.

[Price 6d.

14,005

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

LORD WALSINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. XI.

[VOL. XXXVI.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

J.
LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist, 56, BROMPTON ROAD, LONDON, S.W., Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)

Bottle of Killing Fluid, 9d

Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)

Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.

The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

“NATURE,”

A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE. PRICE 6d.

“NATURE” contains Original Articles on all subjects coming within the domain of Science, contributed by the most eminent scientific writers of the day. It also contains Reviews of all recent scientific works; Correspondence Columns, which form a medium of scientific discussion and of intercommunication among men of Science; Accounts of the leading Scientific Serials; Abstracts of the more valuable papers which appear in foreign journals; Reports of the Proceedings of the Principal Scientific Societies and Academies of the World; and Notes on all matters of current scientific interest.

SUBSCRIPTIONS TO “NATURE.”

	£	s.	d.	(To all places Abroad).	£	s.	d.
Yearly	1	8	0	Yearly	1	10	6
Half-Yearly	0	14	6	Half-Yearly	0	15	6
Quarterly	0	7	6	Quarterly	0	8	0

Money Orders to be made payable to **MACMILLAN and CO., Ltd.**

Office: St. Martin's Street, London, W.C.

the winter within the cocoon, in order to nullify the furious onslaughts when the *Vespæ* are seeking to eject the remaining grubs, &c., at the autumnal exodus. That they are unable to dislodge this cocoon is certain, since wasp's eggs, even partially-grown larvæ, have been discovered in cells already half filled with a parasite's cocoon.

The COCOON is oblong, hexagonal-cylindrical, rounded at the bottom, and with the operculum very flat or even slightly concave; the longitudinal carinæ, however, are only present near its apex in those specimens I have examined—which were, I think always, those of the autumn brood, and not (as figured by André, xxxiv, 7) continued throughout the cocoon's entire length. It is, nevertheless, probable that the length of the carinæ increase with the amount of solidity acquired, and would, therefore, be more conspicuous in those of the spring brood. Rouget says when the larvæ attack ♀ *Vespæ* they are able to consume only three parts of the grubs, and their cocoons are proportionately broader and shallower, because these cells are larger. In the ordinary cells it is about 6 mm. in length and 3½ mm. in diameter. Stone found that each cocoon had a beautifully delicate gold-coloured lining, in which the insect is enwrapped; I cannot, however, find this in my examples, whose inside is of the same dull white as the outer. The parasite emerges through a clean-cut circular orifice bored in the centre of the hexagonal operculum.

There are two emergences (at least) during the year, but it appears to have been by no means satisfactorily settled, whether these are distinct broods or only sexual emergences. Curtis says only part of a single brood emerged in September, these being “probably females,” and the other part, as we are told in the Addenda, produced ♂♂ at the end of the following April. “Is it not probable that they (the ♂♂) would have lived till the ♀♀ of another brood appeared in the following July?” he asks; and on another occasion he records a ♂ bred at the end of May. Mr. Bignell (Ichn. of S. Devon, p. 41) appears to consider the spring emergence to belong to the same generation as that of the autumn, since he says, “others remain over until the following May.” On the other hand, Hope found the imagines in August; Wood may have been mistaken in thinking he found ♀♀ already emerged in July (*cf.* Curtis); André, however, says the second and more numerous brood appears in September, and that the transformation to the nymph takes place before the winter. If this be so, there would appear to be two distinct broods. Perhaps it is sometimes single- and at others double-brooded; in any case, Curtis's theory is not tenable, I think, since in that case the ♂♂ of one brood would fertilize the ♀♀ of the next, which is contrary to the laws of Nature. It is most probable that part of the brood hibernates within the nest and part, like the majority of the CRYPTIDES, survive the winter among dead leaves, moss, and other foreign hiber-

nacula. It has been advanced that the heat of the wasp's occupation may tend to "force" part of the brood, and after the autumnal exodus of the wasps the remainder cannot at once attain maturity, through the fall of temperature; but I should require strong proof before relying on so artificial an agency. Perhaps there is no fixed time of emergence, as the following instances suggest. The duration of the insect in the cocoon, at all events, appears by no means coincident with the pupal existence; larvæ have been found within the cocoon as late as August 24th. We may, I think, grant that, usually, the spring emergence produces that of the autumn, and that the cycle is thus completed in about three months; on the other hand, Bignell records (*Ent. Mo. Mag.*, xxvi, 191) a specimen received early in September, 1889, which was still in the larval condition on June 6th following; and Stone (*Zool.*, xx, 7974, and *Proc. Ent. Soc.*, 1862, 77) tells us that, upon himself opening cocoons, found in 1859, he released quite mature and healthy imagines in March, 1862—after an incarceration of three years! He continues: "The moment the top of the cocoon was removed, it marched out, stretched its legs, passed its fore feet rapidly over its head and antennæ, for the purpose apparently of removing any superfluous moisture"—this was extremely probably the case, since the anterior tibiæ are distinctly clothed on the inner side with a short whitish villosity—"cleaned its abdomen, and smoothed out its wings by means of its hinder feet, and was then prepared for immediate flight. . . . On opening the cocoons, a strong smell of something akin to formic acid was emitted."

Specimens of the spring emergence are fully winged and present no conspicuous points of divergence from average *Tryphones*; but the examples of the later one possess but very short wings, and of use only, like those of *Agrothereutes*, &c., in aiding propulsion by little hops. Mr. Bignell's explanation, which is at least plausible, is that the autumn emergence takes place in the wasp's nests, and the insects consequently find the natural pabulum around them, and no need for sustained flight exists, though that they are extremely vivacious, which is, perhaps, necessary to avoid foreign attacks, Wood points out; it is doubtful, I think, however, if the wasps would molest them under natural circumstances. The spring emergence, on the contrary, is hatched in an empty nest, and must seek pastures new for the deposition of its progeny. This theory is, moreover, borne out by the fact that nearly all specimens taken abroad appertained to the spring emergence.

Even this species, so appropriately called *Chyronomon* by Des-

vignes, is not exempt from hyperparasitism. Sixty-five years ago Kirby wrote (*lib. cit.*): "Upon another examination no more of these insects (*Sphegophagæ*) appearing, he (Hope) discovered that they had been pierced, in their chrysalis state, by a minute species belonging to the family *Chalcididæ*, of which he found no less than twenty specimens flying about in search of their prey." Might these not have been Braconids, of which Mr. Donisthorpe gave me a specimen, unfortunately in too bad a condition for determination, bred from *Sphegophaga* cocoons? Hope persists in the family, however, "a species of *Anomalon*, which is the prey of one of the minute *Chalcididæ*" (Proc. Ent. Soc. Lond., 1838, p. iii). Stone is interesting, though too vague to follow: " . . . Cocoons of *Anomalon vesparum*, intermixed with which were those of a much smaller species of *Ichneumon*" (*sensu lato*, probably), "which made its appearance in the perfect state a few days afterwards" (*i. e.*, after August 24th, 1864). "I am not aware that an ichneumon of this size has been described as an inhabitant of wasps' nests; it may, therefore, possibly prove to be new" (*lib. cit.*, 1865, p. 65).

They sometimes, perhaps often, breed in the same nests with *Metæcus* (*Rhipiphorus*) *paradoxus*, L., which is, however, confined to those of *Vespa vulgaris*, L., while the *Ichneumon* is found with two or three different species, as pointed out by Smith. Hope found *Sphegophaga* in the nest of *Vespa rufa* (Kirby); R. Wood bred it from wasps' nests, presumably from near Manchester, and Blackwall at Cump-rall Hall (Curtis); v. Siebold bred it from *Vespa vulgaris*, in Germany (Ratzeburg); Roujet, abundantly from *Vespa germanica*, Fab., presumably near Dijon (André); Bignell, from "the common wasp," in South Devon (*Ich.*, *l. c.*); Bridgman records it from Norwich (Tr. Norf. Nat. Soc., v, 627), and there is a fully winged ♀ in his collection; Chapman has twice bred it from *Vespa vulgaris* at Hereford (*l. c.* and *in lit.*), and there are three brachypterous ♀ ♀ from him in the Bridgman collection, one of which is very small and, from the colour of the abdomen, probably immature, and one of its antennæ is slightly longer than the other, though both are complete. In the British Museum collection are two brachypterous and one fully winged specimens; of these two, including the last, which was "bred from nest of *Vespa rufa*," and is very probably one of those five specimens bred by Fred. Smith (*cf.* Proc. Ent. Soc., 1862, p. 77) from a Yorkshire nest of this wasp (*v.* Brit. Foss. Hymen., 1858), are from the Desvignes collection; the third being from that of Stephens, who, curiously enough, does not mention the species in his "Illustrations." My own

specimen, together with its cocoon and hyperparasite, were found by Mr. Donisthorpe, and recorded by him in the Ent. Rec. x, 306, from Chiddingfold.* Mr. Beaumont swept a macropterous ♀ from herbage at Boxhill, on May 13th, 1893.

It is premature to conjecture the general frequency of the species in Britain, but this would, doubtless, to a great extent depend upon that of its hosts in any particular year. Thus we find (Proc. Ent. Soc. Lond., 1865, 62) that in 1864, a strong wasp-year, Mr. S. Stone opened, at Cokethorpe Park, one hundred and ten wasps' nests, including those of *Vespa germanica*, F., *vulgaris*, L., *rufa*, L., *sylvestris*, Scop., and *crabro*, L., only two of which contained *Sphegophaga*; these were opened on August 19th and 24th, in both cases occupied cocoons only were present, and in both cases, too, as well as previously in 1859, the host proved to be *Vespa vulgaris*.

CHRONOLOGICAL LIST OF AUTHORS CITED.

KIRBY.....	Bridgwater Treatise, ii, 334	(1824) 1835
CURTIS	Brit. Ent., pl. et fol., 198 (Descript.)	1828
HOPE	Proc. Ent. Soc. Lond., p. iii (177)	1838
WESTWOOD	Mod. Class. Insect., ii, Synops. 57	1840
DESIGNES.....	Cat. Ichn. Brit. Mus., 47	1856
RATZBURG	Ichn. d. Forst., iii, 128 (Descript.)	1844—52
SMITH.....	Brit. Foss. Hymen., 218	1858
STONE	Zoologist, xi, 7974	1862
WESTWOOD..	Proc. Ent. Soc. Lond., p. 77	1862
(STONE)	Proc. Ent. Soc. Lond., 62, <i>et seq.</i>	1865
MARSHALL	Ichn. Brit. Catalogus, 19	1870
MARSHALL	Cat. Brit. Hymen., 79	1872
ANDRÉ	Spp. Hymén. d'Eur. (Descript. larva and pupa)...	1881
BIGNELL	Ent. Mo. Mag., xxvi (2 ser. i), 191	1890
BRIDGMAN	Tr. Norf. Nat. Soc., v, 627	1894
DONISTHORPE	Ent. Rec., x, 306	1898
BIGNELL.....	(Ichn.) Tr. Devon. Ass., xix, 498	1898

Ipswich: February, 1900.

P.S.—In a box of *Ichneumonidæ* sent for determination by Mr. A. H. Hamm, of Oxford, I find a fine ♂ of this species which has the orbits of the eyes, the anterior margin of the mesothorax narrowly, and the whole of the lateral margin, bright flavous. It is fully winged, and was taken at Wellington College, Reading, on June 2nd, 1898. It should have been noticed that Marshall used "*Specophaga*," which is the more correct form.—C. M., April 26th, 1900.

* Since writing the above, Mr. C. O. Waterhouse has kindly shown me many more cocoons, taken at the same time, from which he had bred a macropterous ♀ *vesparum*, together with several specimens of the undetermined hyperparasitic Braconid. These are in the British Museum.

SUPPLEMENTARY NOTES ON *LITHOCOLLETIS PYRIVORELLA*, Bnks.

BY EUSTACE R. BANKES, M.A., F.E.S.

I am now breeding *Lithocolletis pyrivorella* from under-side mines on leaves of wild apple, cultivated apple, and cultivated pear trees, collected at Salisbury, October 25th—November 21st last. The species has not previously been recorded from the county of Wilts. The mines on cultivated apple, on which the larva has never before, to my knowledge, been found, and on cultivated pear, occurred not uncommonly in our garden in the Close, there being no wild pear or apple anywhere near, while those on wild apple were found in hedgerows far away from any gardens. On one small wild apple bush nearly every leaf contained a mine of *pyrivorella*, but by November 21st the birds had already pecked holes from the upper-sides of the leaves into many of the mines, and devoured the owners.

In my original notice of *pyrivorella* I stated (Ent. Mo. Mag., Ser. 2, x, 253) that I had no note about the cocoon: this now proves to be *distinct*, and small, spun of white silk, inside the mine of course, and towards one end of it.

In my description of the imago (*op. cit.* p. 252) the thorax and tegulæ were described as "striped with white." This phrase requires further explanation. There is no white stripe down the middle of the thorax, which, however, often shows a median white spot, or dash, posteriorly, but a horseshoe-shaped white line curves from its apex, which lies just behind the middle of the head, down on each side across the anterior part of the thorax and across the tegula: when the insect is at rest, the white basal streaks on the fore-wings appear as prolongations of the two sides of the horseshoe. While on the subject of the imaginal markings, it may be as well to record an interesting aberration that occurred in a series of about 300 specimens, bred in April, 1890, from mines collected on pear trees in Corfe Castle Rectory garden. The individual, which is a female, has, on each fore-wing, the first and second dorsal white teeth united so as to form an arch: in addition to this, the first and second costal teeth, on the right fore-wing only, unite into a white blotch along the costal margin.

L. pyrivorella is exceptionally constant in size, colour, and markings, no matter from what food-plant it is bred, and owing to the difference in size and the very marked difference in colour, there is no fear of its being confused with *mespilella*, Hb., to which it is closely allied. My friend, Dr. Wood, has found that there are no tangible

differences between either the larvæ, or the male genitalia, of these two species: in the case of the larvæ this is not surprising, for the same is true of *concomitella* and *blancardella*, but it is so in the case of the genitalia, which, as a rule, in this group show well-marked distinctions. It is clear, however, that, although marked differences between the genitalia are proofs of specific distinctness, the absence of such does not prove the specific identity of forms when the weight of positive evidence supports the view that they are really distinct.

In my experience, *pyrivorella*, which is an exceptionally early species, is much earlier than *mespilella*. On the only occasion on which I have reared spring broods of both, side by side, from mines kept under precisely the same conditions from the time they were gathered in the previous autumn, *pyrivorella* began to emerge on March 28th, while the first *mespilella* did not appear until April 27th, and almost identical dates for each have been obtained from other broods reared in separate years. This spring, which is a late one, several *pyrivorella* were found already out on March 24th, although the mines had been kept in cold outhouses throughout the winter, except for a few weeks, when they were in a cold room facing north. The imago follows the general rule, and emerges through the thin lower wall of the mine, instead of through the upper-side of the leaf as does *sorbi*, Frey, leaving the pupa-shell protruding, for about three-quarters of its length, near one end of the mine, sometimes the end towards the midrib, and at others the end away from it. The males, as a whole, emerge before the females.

I have observed that the virgin females of *pyrivorella* may be found "calling" the males at any time between 6 and 10 a.m., but most frequently between 7 and 8.30 a.m. When so engaged they sit with the abdomen turned up as far as possible straight into the air and the anal appendages protruded, the wings motionless, but just sufficiently parted to allow of the abdomen to pass upwards between their dorsal margins, and the antennæ held free of the sides and quivering. I failed to discover how long pairing lasts.

L. pyrivorella is rather subject to the attacks of parasites, and I have bred from its mines three distinct species of "ichneumon-flies," but these have not yet been identified.

Norden, Corfe Castle:

April 14th, 1900.

DESCRIPTION OF THE LARVA OF *METZNERIA LITTORELLA*, Dgl.

BY THE RIGHT HON. LORD WALSINGHAM, M.A., LL.D., F.R.S.

Long., 6 mm. Ivory-white, with a slight yellowish tinge; head blackish; prothorax with two brown chitinous plates, separated in the middle, the separation wider on the middle of the segment than before or behind the middle; anal plate very small, brown; no lateral chitinous plates or spots on the thoracic or abdominal somites; the chitinous portion of the thoracic legs is obsolete, their origin represented only by very minute tubercular excrecences in the middle of a somewhat tumid base, capable of movement to assist locomotion; the abdominal legs are also obsolete.

The larva feeds on the seeds of *Plantago coronopus*, where it may be found in the months of September and October, forming a slight gallery between the seeds and stem, and always making an opening communicating with the interior of the stem on which the seeds are fixed, into this it retires with the head upward. It is presumable that it pupates within the stem, but I have not found it below the level of the seed-heads. *Excl.* 6, V, 1900.

The larva is obviously similar to that of *Metzneria*, to which genus I should refer *littorella* rather than to *Ptocheuusa*.

The imago occurs somewhat plentifully from May 6th to 29th (and perhaps later) on the cliffs near Ventnor, where it was originally found by the late Mr. S. Stevens half a century ago, and frequently sought for by himself and others without success in succeeding years. Owing to its retiring habits it may easily be overlooked unless dislodged by smoke, or other means, from the *Plantago*.

The capture of topotypes proves the correctness of the synonymy *littorella*, Dgl., = *quinquepunctella*, H.-S., for I have myself met with it in the South of France at Cannes, 28, IV, 1890, and in Corsica at Ajaccio, Corté and Vivario, 3—27, V, 1896.

The possession of these foreign specimens, of which I had a perfect recollection, enabled me at once to recognise the first worn specimen which I captured in the Isle of Wight on May 13th, 1898.

Merton Hall, Thetford:
May, 1900.

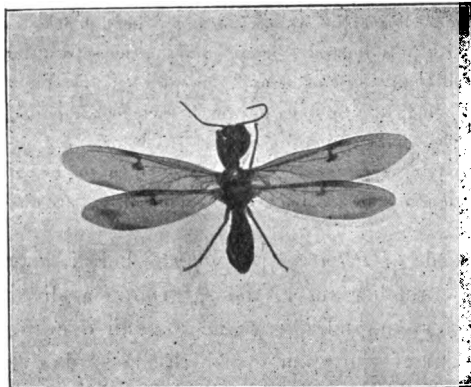
A REMARKABLE NEW MIMETIC SPECIES OF *MANTISPA* FROM BORNEO.

BY ROBERT McLACHLAN, F.R.S., &c.

MANTISPA SIMULATRIX, n. sp.

Body reddish-fulvous; antennæ (at extreme base excepted), posterior tibiæ (excepting at base), and eyes, black; an obscure triangular mark on the second abdominal segment above; abdomen greyish-white beneath. Antennæ stout, longer

than head and prothorax united, about 55-jointed, the joints flattened, perfoliate, crowded, scarcely separable in



the apical portion, first joint pyriform. Head deeply excavated above, with a blunt longitudinal median carina. Prothorax comparatively short and stout; anterior portion of pronotum, occupying more than one-third of its entire length, very much dilated, as broad as the head without the eyes, the anterior margin nearly circular; this dilated portion is followed by a constriction; the posterior portion cylindrical, with two

rather indistinct transverse ridges. Anterior femora much dilated, without markings, their inner edge with one long and four or five smaller teeth, between which are denticles. Wings long and narrow, subacute; colour shining fulvous, paler (almost colourless) at the base of the inner margin; the long narrow pterostigma, and the costal region generally, darker; a long darker clouding on the apical portion of the inner margin, more conspicuous in the posterior, and in these wings in addition there is an ante-apical discal cloud placed on the gradate veinlets: in both pairs of wings the inner end of the pterostigma is clouded with blackish-brown, which is continued on the 1st intraradial veinlet, and extends into the discal area in a dilated and irregular manner: neuration reddish; thirteen costal veinlets in the anterior wings; the three intraradial cellules long and narrow, the 2nd shorter than the 1st and 3rd, which are subequal, the 3rd very narrow: radial sector with thirteen closely placed branches, mostly slightly curved at each end in opposite directions, the resultant narrow cellules being slightly dilated at each end.

Length of body, 20 mm. Expanse, 46 mm. Greatest breadth of anterior wing, 5 mm.

Hab.: Matang, Borneo, August, 1899. One ♀.

A very fine and remarkable species without any very near ally.

The type may be seen for the present in the Hope Collection, University Museum, Oxford. It will ultimately be deposited in the Sarawak Museum, to which it belongs.

"The species is probably extremely rare. The single specimen at present known, constituting the type, was captured in August, 1899, at an altitude of 2500-2800 feet on Mt. Matang, near Kuching, Sarawak, Borneo. It closely resembles a reddish-ochreous *Braconid* which is common on Mt. Matang at any elevation above 1500 feet. In the fresh state the sides and ventral surface of the abdomen of the *Mantispa* are pure white, so that when seen in profile the some-

what bulky body appears to be reduced approximately to the size of the body of its model, which also has the ventral surface of the abdomen coloured white."

[These notes are from a forthcoming paper by R. Shelford, B.A. (Cantab.), Curator of the Sarawak Museum, "On some Mimetic Insects and Spiders from Borneo and Singapore," kindly supplied by Prof. Poulton, F.R.S.]

Lewisham, London :
March, 1900.

A REVISED SYNOPTIC TABLE OF BRITISH CHRYSIDS.

BY THE REV. F. D. MORICE, M.A., F.E.S.

The following corrected Table embraces all the species at present known to me as certainly, or nearly certainly, indigenous in these islands.

1. Abdomen somewhat concave beneath, its dorsum showing three segments only in either sex—2.
 Abdomen convex above and below, dorsum showing four segments in ♀ and five in ♂ Genus *CLEPTES*.
 Prothorax with a transverse punctured line near and parallel to its basal edge, ♀ vertex and mesonotum fiery-crimson *pallipes*, Lep.
 Prothorax without transverse basal line as above, ♀ vertex and mesonotum black *nitidula*, F.
2. Post-scutellum not produced into a long tongue-like plate—3.
 Post-scutellum produced into a long tongue-like plate. Abdomen rather elongate, its extreme apex suddenly truncated and triangularly excised from beneath *NOTOZUS* *Panzeri*, F.
3. Abdomen elongate, a transverse row of fossulets near its apex, beyond which row the dorsal surface of the segment drops to a lower level...
 Genus *CHRYSIS*—13.
 Abdomen ovate or nearly round ; no fossulets on apical segment, which is convex to its apex—4.
4. Abdomen not incised at apex—8.
 Abdomen distinctly incised at apex Genus *ELLAMPUS*—5.
5. Post-scutellum merely a little convex—6.
 Post-scutellum acutely conic ; edge of third abdominal segment membranous, its sides much undulated, its apex truncated and excised as in *NOTOZUS*. (Insect wholly blue and green) *truncatus*, Dhb.
6. Mesonotum very smooth and shining Abdomen blue or green *æneus*, F.
 Mesonotum punctured, not smooth and shining—7.
7. Apical incision long, triangular or lancet-shaped. Abdomen more or less golden *auratus*, L.
 Apical incision wide but very short, inconspicuous. Abdomen blue or dark green *caeruleus*, Dhb.

8. Prothorax distinctly longer than mesonotum. Upper basal nervure in superior wing hardly incurved Genus *HEDYCHEUM*—12.
Prothorax not longer than mesonotum. Upper basal nervure bent sharply inwards, forming a distinct angle—9.
9. Radial cell open at apex. Claws of tarsi with several teeth along the lower edge, a large one close to apex *HOLOPYGA gloriosa*, F.
Radial cell closed at apex. Claws of tarsi with one small tooth only on lower edge, at some distance from the apex Genus *HEDYCHRIDUM*—10.
10. Abdomen pale rosy-testaceous, like pink coral, not metallic, hardly shining; thorax wholly green or blue *roseum*, Rossi.
Abdomen very brilliant, metallic, colour deep; thorax not wholly green or blue—10.
11. Thorax somewhat smooth; its puncturation remote; abdomen with long scattered hairs at apex *integrum*, Dhb.
Thorax closely punctured, abdomen merely pubescent at apex.
(a) Thorax coriaceous, dull; post-scutellum deep blue *coriaceum*, Dhb.
(b) Thorax coarsely and unevenly punctured, brilliant; post-scutellum brassy...
minutum, Lep.
12. No part of thorax fiery-red or golden *mobile*, ♂, Scop.
Pro- and mesothorax fiery-red or golden *mobile*, ♀, Scop.
13. Whole insect dark blue or green; apex of abdomen distinctly but very obtusely tridentate *cyanea*.
At least one abdominal segment wholly, and another partly, red or golden above; apex not tridentate—14.
14. Thorax with, at least, some definite dorsal space entirely golden or fiery-red—15.
Thorax with, at most golden touches here and there, general effect dark blue or green—17.
15. Scutellum and prothorax fiery-red; apical segment of abdomen blue, or blue and green—16.
Scutellum blue; prothorax only touched with gold at apex; last segment of abdomen red, with a black or greenish apical margin; apex distinctly but obtusely quadridentate *succincta*, L.
16. Large, finely and evenly punctured; prothorax and second abdominal segment long; pubescence very short; apex of abdomen very indistinctly angled at sides, almost rounded *viridula*, var. *ornata*, Smith.
Smaller, much more coarsely and irregularly punctured; prothorax and second abdominal segment shorter; pubescence long and conspicuous; apex of abdomen distinctly but obtusely quadridentate *viridula*, L.
17. Basal segment of abdomen deep blue in both sexes, a large patch of the same colour extending over the second segment in the ♂, abdomen strongly quadridentate *fulgida*, L.
Whole abdomen (above) fiery-red or golden—18.
18. Apex of abdomen distinctly and often sharply quadridentate—21.
Apex of abdomen rounded, without teeth—19.
19. Pubescence very short and inconspicuous; second abdominal segment with extremely close, fine and uniform punctures; cheeks between eye and mandible short *neglecta*, Shuck.

Pubescence long and abundant ; second segment less closely and finely punctured, punctures of two distinct sizes intermingled ; cheeks long—20.

20. Punctures of first abdominal segment conspicuously larger and coarser than those of second, general effect of abdomen somewhat opaque and rugulose ; a large insect with long, pale pubescence *pustulosa*, Ab.

Punctures of first and second segments not strikingly dissimilar ; abdominal surface rather brighter than in *pustulosa* ; insects rather smaller than that species.

(a) Hairs on apical segment, at least in part, black ; fossulets nearly obsolete *hirsuta*, Gerst.

(b) Hairs on apical segment white ; fossulets distinct *osmia*, Thoms.

21. Abdomen (beneath), and legs, with fiery-red reflections ; whole insect more densely hairy ; puncturation finer and more even ; metathoracic spines more curved and sharper *Ruddii*, Shuck.

Abdomen (beneath) seldom, and legs never wholly, fiery, rather green or blue ; pilosity thinner ; puncturation very variable, but probably always coarser than in *Ruddii* (often very much so), and becoming remote towards the apex of segment 2 (which is usually very brilliant), always closer again on segment 3 ; metathoracic spines more stout and triangular..... *ignita*, L.

Brunswick, Woking :

April, 1900.

ELASMOTETHUS FERRUGATUS, FAB., IN WALES.

BY W. E. SHARP.

A specimen of this Hemipteron, so far unrecorded as British, was taken by my friend, Mr. E. J. Burgess Sopp, in July last near Bangor, North Wales, and forwarded to me unset in laurel with other *Hemiptera*, &c.

As I was unable to refer the insect to any British species, I submitted it to Mr. Saunders, who identified it as *Elasmotethus ferrugatus*, Fab., a Pentatomid of European distribution, and in this reference Mr. Distant (who has also seen the specimen) concurs.

The insect was swept from low herbage in the Ogwen Valley not far from Bangor ; it may of course have been an introduction, but the nature of the locality where it was captured does not lend itself to such a supposition, the vegetation of the whole district being entirely natural, nor do the Pentatomid *Hemiptera* in view of their habits and life histories appear to be at all probable subjects for accidental introduction.

Ledsham, Hanwell, W. :

May, 1900.

[I hope more specimens may be taken of this very distinct species. Such a conspicuous insect should not remain as a solitary specimen, now a locality for it is indicated, and a few more examples would more satisfactorily decide its right to a permanent place in our fauna; there is no reason why it should not occur in Britain, as it has been found nearly all over Europe, and is, so far as I know, always more or less rare, and taken only in few specimens at a time. It may be easily recognised, as it somewhat resembles an *Elasmotethus interstinctum*, only the angles of the pronotum are produced into strong black spines.—E. SAUNDERS].

Peribalus vernalis, Wolff, in Slindon Woods, Sussex.—The right of the above species to appear in our list has rested up to the present time on two records: one of a specimen taken at Weston-super-Mare, which was formerly in the collection of Mr. G. B. Crotch, and was given to me by him; the other of a specimen taken at Borrowdale, Cumberland, recorded by the Rev. T. A. Marshall. Lately whilst at Bognor I had the pleasure of looking over the *Hemiptera* taken by Mr. Guermontprez, and amongst them was surprised to see an individual of the above rarity. Mr. Guermontprez tells me that he took it himself, and it bears a label, "Slindon Woods on hazel, Sept. 13th, 1899." The captor knows the exact locality where it occurred, and recognised it as a rarity when he captured it; he tried hard for more, but without success. It is to be hoped that further captures may reward his efforts this coming season. It is curious that two very rare Pentatomids should turn up in the same season.—EDWARD SAUNDERS, St. Ann's, Woking: May 3rd, 1900.

Spring Butterflies in Dorset and Devon.—Spring Butterflies in these regions have appeared about the usual dates of their first emergence. I saw *Lycena Argiolus* at Sturminster Newton about April 20th; and *Anthocharis cardamines* here on May 1st; the former is plentiful here at the present time. Of *Vanessa* I have seen only *urticæ* and *Io* hitherto.—A. E. EATON, Seaton, Devonshire: May 2nd, 1900.

Diplodoma marginepunctella, Stph., in Dumbartonshire, N.B.—Among some *Lepidoptera* lately received for identification from Mr. J. R. Malloch, I found an exceptionally fine and perfect specimen of *Diplodoma marginepunctella* that was taken by him at Bonhill, Dumbartonshire, in June, 1898. This capture is of special interest, because, although the species has occurred in various localities in England from the south coast up to Cumberland, and also in Ireland, I am not aware that it has ever been recorded from, or taken, in, any part of Scotland. In my own experience, and that of the majority of those who have had the good fortune to meet with *D. marginepunctella*, it is a decidedly scarce and local insect, although so widely distributed.—EUSTACE B. BANKS, Norden, Corfe Castle: May 5th, 1900.

Occurrence of Xenolechia athiops, Westw., in Scotland in April.—I can find no record either of the occurrence of *Xenolechia athiops* in Scotland, or of its appear-

ance in April. It therefore seems worthy of mention that three specimens of it, together with many of *Philedone prodromana*, Hb., were taken at Bonhill, Dumbartonshire, N.B., by Mr. J. R. Malloch on April 21st last. Of these three specimens I have before me two, one of which is a much worn male, while the other, which Mr. Malloch has kindly given me, is a female in fine condition. One is not surprised at *athlops* being met with in Scotland, because a species that is so well known as a frequenter of the moors in the extreme north of England might naturally be expected to occur on the other side of the border, where its food-plant, *Erica cinerea*, is equally common, but it has not, to my knowledge, been previously taken there, and Meyrick, in summarizing (H.B. Br. Lep., 583) its recorded distribution in Britain up to the year 1895, gives its range as only from "Cheshire to Northumberland." Since then its capture at Reading has been announced, under the generic name *Gelechia*, in Ent. Mo. Mag., Ser. 2, vi, 196 (1895), but it seems, as a rule, to be absent from the midland and southern moors. It has also been recorded, under the name "*Lita athiopiella*," from Dorset by Mr. C. W. Dale, in Lep. Dors., ed. 2, 57 (1891), but I hope my friend Mr. Dale will forgive me for stating, in the interests of science, that neither this species, nor sundry others that are included in his work, has any right whatever to a place in our county list, as I propose to show in the Catalogue of the *Lepidoptera* of Dorset that I am preparing for the "Victoria History" of the county.

The date of the appearance of the imago seems to be somewhat earlier than is generally supposed, seeing that (in this very backward spring) Mr. Malloch took three specimens (one being *much worn*, as though it had been out some time) on April 21st, at a considerable elevation, as far north as Dumbartonshire, while no author, whether British or continental, to whom I have referred, gives it as being out before May, and those who specify the date more precisely mention either "the middle of May," or "the end of May," as being the time when it *first* appears. I see, however, from Ent. Ann., 1862, p. 129, that "T. W." (presumably Thomas Wilkinson, of Scarborough) took one specimen early in May, 1861, and seems to have hoped to find others then. Mr. Malloch, who previously met with a worn individual of *X. athlops* at Bonhill on May 15th, 1897, thinks that other examples might have been secured on April 21st had not the wind been so strong.—*Id.*: *May 13th*, 1900.

Carabus auratus, L., near *Exmouth*.—I have very great pleasure in recording the capture of what appears to be an authentic British example of this great rarity. It was sent to me for identification by Miss Hilda Ferrand, of Exmouth, who informs me that it was taken either in June or September, 1898, by her father on the Haldon Hills, which run from the mouth of the Exe to Dartmoor, and average from 800 to 900 feet in height. Mr. Ferrand remembers capturing the insect perfectly well, but as neither he nor his daughter had the slightest idea of its value, it remained in the collection of the latter until a few weeks ago, in company with a number of other unrecognised species.—THEODORE WOOD, 157, Trinity Road, Upper Tooting, S.W.: *April 23rd*, 1900.

Harpalus serripes, Schönk., inland.—Mr. B. S. Harwood has recently sent me specimens of this species to name from Dartford Heath, where he has found it in

numbers during the present month. I have not seen any record of this common coast insect from an inland locality, and the present capture therefore is worth noting.—G. C. CHAMPION, Horsell, Woking: *May 12th*, 1900.

Stylops melitta, Kirby, at Woking.—Males of this species have again been seen this year on the wing in my garden, and four captured, on various days between April 24th and May 5th. The weather, however, has been very unfavourable so far, but few mornings having been warm enough for them. Last year specimens were seen in the same spot between May 7th and May 13th. Oddly enough, neither last year nor this, has a Stylopized bee been caught, though many *Andrena* have been taken and let loose again. Mr. A. J. Chitty tells me that he also found a ♂ *Stylops* in his garden at Faversham on May 2nd, the same day that one was captured here.—Id.

A bituberculate form of Homalota vicina, Steph.—Amongst a batch of some twenty *Homalota vicina*, Steph., caught in the spring of 1899, but not examined until December last, I have found four males with a tubercle on the third segment of the hind body, in addition to the usual one on the second segment. This supplementary tubercle is quite equal in prominence to that of ordinary examples characteristic of the species, whilst the tubercle on the second segment in these specimens is much larger than usual. The beetles were taken in rotting straw which had been used as a thatch for a large stock of mangolds for feeding cattle on a dairy farm, and stored out of doors in a sheltered corner of a field. There was also a considerable quantity of damaged mangolds amongst the *débris*, which added greatly to its attraction for insect life. Mr. Newbery is of opinion that this bituberculate insect should be ranked as a variety; Mr. Champion, on the other hand, is disposed to regard it as a "very well-developed form" only. Are there any similarly bituberculate specimens in the collections of other workers at the group which have hitherto passed unnoticed?—J. H. KEYS, 6, Seymour Terrace, Lipson, Plymouth: *May 14th*, 1900.

Stenus opticus, Grav., &c., at Plymouth.—A single specimen of *Stenus opticus* has occurred to me whilst searching a manure heap in a marsh near Plymouth. It is an interesting addition to our local list of *Coleoptera*, most of the recorded captures being from the fens. The *Stenus* was probably only wintering in the manure, which I may observe was fairly dry where it was obtained. Three examples of *Chlanis vestitus* also came from the same heap. I was much astonished to see them in such a situation. Another rather curious capture this month also is that of *Trox scaber*, within a mile of Plymouth Guildhall, in a field behind some extensive stables. I took a dozen, and might have had many more, if time permitted, by cutting grass around the edges of a manure heap. I was told that, within living memory, a dead horse had been interred in the field, and this doubtless accounts for the *Trox*. I have never seen the beetle alive in the district before, although I think that my friend Mr. J. J. Walker told me he had once taken it at Whitsand Bay.—Id.

Pyrochroa serraticornis, Scop., in numbers in a conservatory.—On April 28th I was visiting some friends at Felpham, near Bognor, and was told that a red beetle

was very abundant in their conservatory. I was very much surprised to find that the beetles in question were *Pyrochroa serraticornis*, about the last species that one would have expected to find in such a locality. I suppose the warmth of the conservatory brought them out earlier than usual, and that they must have been introduced in wood in their larval condition.—EDWARD SAUNDERS, St. Ann's, Woking: May 12th, 1900.

Mutilla europæa and *Polistes gallica*, L.—Mr. G. C. Champion sent me last year a ♀ of *Mutilla europæa* which he and Mr. S. Edwards had taken crawling on a nest of *Polistes*, attached to a rough stone wall by the roadside, at Fusio, Val Maggia, Ticino, last July. I do not remember having seen *Mutilla* recorded as being parasitic on *Polistes*, and its presence on the nest of that wasp certainly suggests the probability that its visit was of a parasitic nature.—ID.

Concerning a remark in Mr. Morley's paper on *Sphegophaga vesparum*.—I desire to demur to Mr. Morley's footnote on p. 120, where he states as definitely as if he had seen it done, that the fluid of the "ghost" of the wasp is "gradually absorbed by the parasite." This seems to me to be not only unlikely, but so impossible, that the idea becomes untenable. The wasp remains ("ghost" *michi*), if left undisturbed by the wasps, will doubtless dry up and shrivel as recorded by M. Rouget, is a question, probably, of days, or at most a week or so. Still more rapidly if the wasp comb be placed in a dry room, which I rather fancy is the condition of M. Rouget's observation, since he notes that in the nest the wasps clear out the "ghost," and that eggs are laid on the cocoon of *vesparum*, as in any other cell. During the same period the larva of *vesparum* in its cocoon is probably also shrivelling a little, since that is a very usual occurrence in *Hymenoptera* after spinning up, especially in parasites such as *Chrysis*, &c. (see Ent. Mo. Mag., vi, 157). Whilst the "ghost" is shrivelling therefore, *vesparum* is in no want of fluid. But, whether or whenever, it wanted it, it could not get it. We may conclude it does not want it, since its cocoon is as dense as any I know, and almost impermeable. This density is no doubt designed to protect the larva all the winter amongst the *débris* of the wasp's nest, not so much against living enemies, as against any excess or defect of moisture that is certain to occur. The "ghost" is remarkable for its cleanness when removed from the cell, the cell with *vesparum* cocoon at its base, is perfectly clean and dry, and the truncated end of the "ghost" is as dry and closed up as any other part of it. I should as soon expect a man to eat a good dinner through the wall of a fireproof safe as for *vesparum* to absorb any of the "ghost"ly materials. It is further very possible that the "ghost"ly fluid contains excrementitious matter of *vesparum*.—T. A. CHAPMAN, Betula, Reigate: May, 1900.

A few localities for certain *Psychodidæ* collected in England (Wicken Fen, Chippenham Fen), Scotland (Aviemore and Guisachan, Inverness-shire), and Ireland (Kilmacrenan, Donegal).—*Pericoma mutua*, Etn., Kilmacrenan, July 10th, 1891; Guisachan, June 19th and 20th, 1899. *P. nubila*, Meigen, Wicken Fen, July, 1892, common; Chippenham Fen, August, 1892, common. *P. trivialis*, Etn., Kilmacrenan, July 10th and 27th, 1891. *P. ocellaris*, Meign., Aviemore, 1899; Wicken Fen, July, 1892; Chippenham Fen, August, 1892, common. *P. notabilis*, Etn.,

Wicken Fen, July, 1892, common. *P. morula*, Etn., Wicken Fen, July, 1892; Chippenham Fen, August, 1892. *P. caliginosa*, Etn., Wicken Fen, July, 1892. *P. fusca*, Macquart (?), Wicken Fen, July, 1892.

Psychoda phalanoides, L., Wicken Fen, July, 1892. *P. alternata*, Say (*sex-punctata*, Curt.), Wicken Fen, July, 1892. *P. humeralis*, Meigen, Chippenham Fen, August, 1892.

The above *Psychodidae* have been collected by me and submitted to the Rev. Alfred E. Eaton, who has kindly named them for me. He says that of the species from Aviemore, Guisachan and Kilmacrenan two occur commonly in hilly parts of Somerset and E. Devon, but *P. mutua* is local on those hills, and does not figure in many collections. The species of *Psychodidae* from the Fens are not all the species that are likely to be found there should the time of collecting be extended a month or six weeks earlier and later; most of them are plentiful in marshy districts, but *P. caliginosa* is local, more so than *morula*.

The English and Scottish specimens will be placed in the Edinburgh Museum of Science of Art, and the Irish specimens will go to the Dublin Museum of Science and Art.—JAMES J. F. X. KING, 1, Athole Gardens Terrace, Kelvinside, Glasgow: May, 1900.

Eschna cerulea in Ross-shire.—Lately, when looking through some of my captures that had been laid aside, I found a female of *Eschna cerulea* taken at Loch Rosque, near Loch Maree, Ross-shire, on July 8th, 1890. This so far is the most northerly record for the species in Britain.—ID.

The late Mr. R. H. Meade's Collections.—We understand that these collections have been presented to the Yorkshire College at Leeds. We place this prominently on record inasmuch as a not inconsiderable number of *types* are included amongst the *Diptera*.—EDS.

A proposed Supplement to Scudder's "Nomenclator Zoologicus."—We hear with great satisfaction that the Council of the Zoological Society has entrusted to Mr. C. O. Waterhouse, F.E.S., of the Entomological Department of the British Museum (Natural History), the preparation of what will practically amount to a Supplement to "Scudder," consisting of a collective alphabetical arrangement of the Lists of Genera published in the annual Zoological Records since 1879, together with generic names omitted in "Scudder" (and they are not few). Of the enormous utility of such a work there cannot be two opinions. In order to render it as complete as possible all workers are requested to communicate to Mr. Waterhouse any terms known by them to be omitted in "Scudder," or in the vols. of the Zoological Record.—EDS.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: March 21st, 1900.—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Mr. Charles Carey Woods, Edmund Street, Birmingham, was elected a Member of the Society.

The President referred to the death of Mr. W. G. Blatch, who was the first President of the Society, filling that office from the commencement in 1888 till February, 1894.

Mr. P. W. Abbott showed long series of several species of *Lycanids*, particularly a very fine set of *Alexis*, including a nice series from Ireland, with blue form of the female; also some of the white bordered form of *Corydon* taken by Mr. T. H. Fowler on the Dorset coast. Mr. G. T. Bethune-Baker, many fine *Lycanids*, including some of the blue form of the female of *Alexis* from continental localities, also a remarkably small form of the species from Algeria, almost as small as *minima*; also the beautiful red-bordered form of *bellargus* = *ceronus*, &c. Mr. C. J. Wainwright, the genus *Eristalis*, and other Syrphids. Mr. A. H. Martineau, some Aculeates collected by Mr. C. J. Wainwright, including the very rare *Crabro pubescens*, one male specimen from the New Forest; he said that less than a dozen specimens at present were known from the whole of Britain. Mr. R. C. Bradley read a paper upon Mosquitos; he gave a full account of the various genera in all their stages, and then referred to the recent interesting discoveries of their connection with malaria; he showed various specimens representing all the genera, chiefly British forms. A discussion followed, in which various Members gave their personal experiences of the biting habits of these insects at home and abroad, and also discussed the origin of the habit, &c. Mr. G. H. Kenrick believed the habit had originally begun through these insects sucking the juices of plants; Mr. Neville Chamberlain said he believed people after a time became indifferent to their bites, becoming as it were inoculated; this was his own experience in the Bahamas, where at first he suffered badly, but afterwards was quite indifferent.—COLBEAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
March 8th, 1900.—Mr. W. J. LUCAS, B.A., F.E.S., President, in the Chair.

Mr. Harwood exhibited a species of *Blatta* from the Eastern Counties, which was apparently new to Britain. Mr. Adkin, a bred series of *Eugonia autumnaria* from Bournemouth. Mr. Colthrup, a specimen of *Euchelia jacobææ*, with the red areas unusually pale, a very beautifully marked variety of *Eurhypara urticata*, and very small examples of *Pieris rapæ*, including a yellow variety. Mr. Lucas, living specimens of the immature stage of *Blatta australasiae* from Kew, and a case containing examples of the whole of the British cockroaches, with drawings of several species. Mr. Main, living specimens of *Blatta americana* from Silvertown. Mr. Edwards, living specimens of *Phyllodromia germanica*, male, female, and immature. Mr. Moore, numerous exotic species of cockroaches. Mr. Tutt, a long and varied series of *Epunda lutulenta* taken at Mucking, Essex, by the Rev. E. Burroughs in 1898—9, and gave notes as to the occurrence and variation of the species. Mr. Lucas read a paper, entitled, "Cockroaches: Natives and Aliens," illustrating it with numerous lantern slides.

March 22nd.—The President in the Chair.

Mr. Mac Gee, of Lillie Road, S.W.; and Mr. J. Platt Barrett, of Margate; were elected Members.

M

Mr. Montgomery exhibited specimens of a second generation and a partial third brood of *Coremia designata*, and gave notes on their life-history and variation. Mr. F. N. B. Carr, a varied series of *Hibernia leucophæaria* from Lee.

April 12th.—Mr. F. NOAD CLARKE in the Chair.

Mr. G. B. Browne, of 43, Southbrook Road, Lee, was elected a Member.

Mr. Edwards exhibited a living specimen of *Scorpio europæus* sent by Dr. Chapman from Cannes; it fed readily upon cockroaches. Mr. Sich, living larvæ and cases of *Coleophora lineolea* from Chiswick. Mr. Clarke, photo-micrographs of the ova of (1) *Eugonia fuscantaria*, showing clearly the serrated edges; (2) *Geometra vermaria*, in piles as deposited; and (3) *Neuronia popularis*. Mr. Colthrup, specimens of *Bombyx quercûs*, v. *callunæ*. Mr. Tutt gave an interesting account of the Lasiocampid moths to which he had recently been devoting his attention; he showed that they formed a clearly definable section, and contained numerous easily distinguishable, although closely allied, subsections and genera; the various points of view, of ovum, larva, pupa, and imago were taken into consideration, and contrasted and compared with allied groups, as well as *inter se*.

April 26th.—The President in the Chair.

Mr. Rowden, of Kingston Hill, was elected a Member.

Mr. Buckstone exhibited specimens of *Triphæna fimbria* bred from ova; the larvæ had been fed exclusively on cabbage. Mr. Turner, Longicorn *Coleoptera*—(1) *Saperda populnea*, taken by Mr. Day at Carlisle; (2) *Rhagium bifasciatum* from the New Forest; (3) *Clytus mysticus* from Brockley; (4) *C. arietis* from Lewisham; together with larvæ of (1) *Callimorpha dominula* from Deal, where they were comparatively scarce; (2) *Bombyx quercûs* from Deal, on garden rose; (3) *Pericallia syringaria* from Bexley. Mr. Moore, a Kaffir necklace said to be made of the "eggs" of a white ant, *Termes bellicosus*; these so-called "eggs" are the pupæ of a Coccid of the genus *Margarodes*. Mr. Lucas, a specimen of the Dragon-fly, *Sympetrum vulgatum*, a male, taken by Mr. Hamm, of Oxford, at Torquay on August 15th, 1899; this is the second authenticated British specimen. Mr. Adkin, a fine bred series of *Eugonia fuscantaria* from Lewes ova, and stated it was easy to breed when sleeved. Mr. Clarke reported that he had received ova of *Gonepteryx rhamni* which had been found deposited on the stems of the buckthorn. Mr. Harrison reported having seen a Dragon-fly, *Libellula quadrimaculata*, on the wing at Easter.—H. J. TURNER, Hon. Sec.

ENTOMOLOGICAL SOCIETY OF LONDON: April 4th, 1900.—Mr. G. H. VERRELL, President, in the Chair.

Mr. J. W. Carter, of 25, Glenholme Road, Manningham, Bradford; Mr. L. L. Feltham, of Johannesburg, South Africa; and Mr. H. Fortescue Fryer, of The Priory, Chatteris, Cambs.; were elected Fellows of the Society.

Mr. M. Jacoby exhibited specimens of the genus *Sagra* from Eastern Asia. Mr. M. Burr, three species of *Pseudophyllidæ*, two new species of *Capnoptera* (females), and *Capnoptera quadrimaculata*, Westw. (female), collected in the Siamese Malay States, by Mr. N. Annandale. One of the specimens illustrated the peculiar methods of offence adopted by the insect when alarmed. Between the head and

the pronotum a scarlet hood was visible, the inflation of which bladder-like organ always indicates fear or anger. The other specimens showed the natural position of the head and pronotum. Mr. H. J. Elwes communicated a paper on "Bulgarian *Lepidoptera*," and made some remarks on the more notable species which he had taken in the Balkan Peninsula during the months of June and July, 1899. The number of species of *Rhopalocera* captured was 120, which, with a further 20 recorded by Haberhauer and Lederer, brings up the total to 140. The mountains visited were an extension of the Rhodope range, where the climate was particularly rainy, a great number of ferns flourishing everywhere, in contrast to the drier Balkans, where the number of species of *Rhopalocera* is not less than 200. Some interesting forms, but no new species, were encountered. A variety of *Colias Myrmidone* occurred, much larger and brighter than the Austrian, and more nearly agreeing with the Ural, form; and whereas in Austria the white aberration is exceedingly rare, in this locality it predominated. Meanwhile, the orange forms clearly resembled *Colias Heldreichi*. The form of *Cænonympha Davus* met with showed an affinity with the Asiatic, and not the European, form, and was almost precisely similar to specimens taken in the mountains of Armenia by Haberhauer. The form of *Argynnis Pales* was intermediate between that found in Greece and the central European Alps, while a form of *Erebia*, var. *Gorgone*, was taken similar to that in the Pyrenees—a curious instance of interrupted distribution.—C. J. GAHAN and H. ROWLAND-BROWN, *Hon. Secs.*

MEMORANDUM FROM THE EVOLUTION COMMITTEE OF THE ROYAL SOCIETY.

1.—The Committee appointed by the Council of the Royal Society to promote investigation of facts relating to Variation, Heredity, Selection, and other phenomena connected with Evolution, are desirous of instituting a collective investigation into the progressive melanism of certain moths, particularly *Geometridæ*.

2.—It is well known that in certain districts, especially within the British area, dark forms of several species of moths have recently appeared and become increasingly abundant. There is reason to believe that these dark forms are in some cases extending into other districts, and even to the European Continent.

3.—It is to be regretted that no systematic or statistical records of these phenomena have been kept, and it appears to the Committee that if such a record be now instituted and continued for a period of years, it cannot fail to have considerable scientific importance.

4.—The matter is one that may conveniently be made the subject of collective investigation, and the Committee will be glad to hear from any entomologist who may be willing to contribute now, or hereafter, particulars as to the condition of these species in the district or districts with which he is personally familiar. The returns should relate as far as possible to specimens *found in a wild state*, whether as imagines, or pupæ, larvæ or eggs. Information respecting specimens bred from wild parents must be kept distinct.

5.—It is thought desirable that the enquiry should for the present be confined to the following species:—*Acidalia aversata*, *Amphidasys betularia*, *Boarmia re-*

pandata, *Camptogramma bilineata*, *Gnophos obscurata*, *Hemerophila abruptaria*, *Hybernia progemmaria*, *Phigalia pilosaria*, *Acronycta pai*, *Agrotis corticea*, *Aplecta nebulosa*, *Polia chi*, *Tenusia cambrica*, *Xylophasia polyodon*.

6.—The Schedule in which it is suggested that the returns should be made is enclosed herewith (**Schedule A**). It is desired that the return for each species be made on a separate Schedule, and the Secretary will be glad to furnish a supply of these Schedules to any one who may be willing to assist.

7.—Since confirmatory evidence is of special value, the Committee are desirous of receiving returns made independently by different persons for the same district. It is of course hoped that returns may be obtained for districts in which the dark forms are still unknown.

8.—The Secretary will be glad to examine and prepare descriptions of any illustrative specimens lent to him for that purpose, and in suitable cases arrangements will be made for photographing such specimens.

9.—**HISTORICAL EVIDENCE.** As the changes in question have largely taken place within living memory, it is hoped that those who have personal knowledge of the facts may be induced to put them on record in such detail as is still possible. Much information of a historical character is of course already printed in the scientific journals, but a more detailed account of the facts would be of great value. With this object a special Schedule (**B**), marked "Historical," will be issued to those who will fill it up.

10.—On publication full acknowledgment will be made of all help received. All communications should be addressed to the Secretary of the Evolution Committee, W. RATESON, Esq., F.R.S., Merton House, Grantchester, Cambridge.

May, 1900.

FURTHER NOTES ON SOUTH AFRICAN LEPIDOPTERA.

BY FRANCES BARRETT; EDITED BY C. G. BARRETT, F.E.S.

[In the following notes the original observations, extracted from letters received from my sister, are within inverted commas. My own remarks thereon are within square brackets.—C. G. B.]

Charocampa Eson, Cr.—"These were reared from caterpillars found by a neighbour on his arum-lilies, in a little flower house, and sent down here. Fortunately, food being scarce, they soon spun up, or rather half buried themselves. The caterpillars were of a juicy green, and had a horn on their tails."

Deilephila Schencki, Mösch.—"I have secured another beauty, at sunset, flying round the peach blossoms. It looked like a living flame as its wings quivered among the pink bloom. I only wish that you could have seen it alive. Some more have been caught around the flowers of the *Plumbago*; this pretty tender bush has no thorns, but generally supports itself on a "friend that has them!"

[This is indeed a beautiful species—of the size of *D. galii*—its fore-wings longitudinally striped with ruddy-brown, olive-brown, and pale ochreous, with a row of white lines down the middle; hind-wings rose-pink, with a black hind border

and white cilia ; body ruddy-brown, with a complete silvery-white line down the middle of the back from head to tail, and pink and white stripes on the long shoulder-paets. I know of no hawk-moth equalling it in loveliness.]

Deilephila capensis, L.—“I have been thinking about this species. Those that came to the orange trees at night behaved differently to the other hawk-moths. Generally I get them only at dusk, just for a little while, and then they vanish ; if I take out a light they are not about ; but these (*D. capensis*) came late in the evening, and were inexpressibly beautiful, glancing about among the orange flowers, their eyes like living coals.”

Acherontia Atropos, L.—“The young people have caught two ‘Death’s-heads’ fighting the bees in the windows of a big room, where, unfortunately, the latter have obtained a footing. The combs are high up among the rafters, and the window sills and floor get thickly sprinkled with dead bees.” [Later.] “I have been asking about the fight of the Death’s-heads with the bees in the long room, which happened while I was away. Arthur noticed a commotion among the bees, and looking up at the top of the window saw them flying round and apparently trying to sting the largest of the Death’s-heads which I sent. He says that it made a cry something like a beetle’s note (E. says that the Spanish flies make a similar cry when you hold them by the back). After a while the fight ceased, and the moth settled on the lower part of the window. We do not even know whether it was stung, for Arthur bottled it for you. The smaller Death’s-head was found at the bees’ nest in the other wing. It was just settled against the window-frame quite quiet, the bees only buzzing about. The honey there sometimes runs down the wall.” [Later.] “We have found more, always at or near the bees’ nests, which are so high that we cannot see what is going on in the dim obscurity of the gables. Those which are found by day are quietly settled in the window frame, with the bees buzzing round in a rage. One was settled under the bees’ nest at night when I went in with a light ; there was also a bat flying round, and presently there was a contest with the bat which should get it, till it fortunately took shelter in the net. Another flew round a room where we had an entertainment one night, finally settling on one of the boys, and uttered its cry when he took it into his hand. The cry is very interesting.”

Lophurion magnificum, Rothschild.—“Last night I caught a beautiful little hawk-moth by watching a flowering bush in the old mission garden until I had a chance, and then making a dash for it. These flowering bushes grow among the prickly pear, in which it is impossible to net anything. The only opportunity is when the moth ventures to an outside twig, about which it is very shy. I have caught the same species about the blossoming peach trees, along with that ruddy-brown beauty (*Deilephila Schencki*), also at the orange blossom, and Arthur found one by day on a mulberry leaf, which he secured with little trouble.”

[This is a charming little species, about the size of *Chærocampa porcellus*, but more of the shape of *Smerinthus tilia*, its fore-wings pale grey-brown, with a large dark olive costal triangle, in which is a white spot, also some irregular olive dorsal markings or even a complete central band ; the hind-wings yellow at the base, rich red at the apex, and with a large semi-ocellus of grey and blue at the anal angle ; thorax pale grey in the middle, olive-green on each side. It has been quite recently discovered, and named by the Hon. Walter Rothschild.]

Lophura pyles, Cr.—“Harry has caught a beautiful little hawk-moth with his hands. We had been watching it while Arthur ran for a net, when it dashed from a rose tree to the ground, as if to hide itself, but Harry secured it!”

Sphingomorpha Monteironis, Butler (*ante* Vol. xxxiv, p. 240). [My correspondent has devoted a great deal of attention to this species, and its special method of damaging the fruit. She says:—“I have been having a most wonderful harvest of moths. The figs have spoiled with the damp and heat, and lie rotting on the ground, and even those still upon the trees are mostly uneatable. At night the trees are swarming with ‘fruit-moths’ and numbers of other species. Last night I went down just at dusk, taking my lantern, and had the good fortune to find a large fruit-moth at work in the middle of a fig-tree, so intent that it did not notice either me or my light. It was on the side of a fig, with its trunk boring into the fruit, and seemed to be sucking. If it had gone to the top it would have found a little opening in the ripe fig, or if the weather had been damp, perhaps a crack in its side, but this fellow was boring with its trunk. A large portion of our fruit, and especially of the peaches, is spoiled by rotting on the trees, and the only visible cause is a tiny spot on the outside, evidently the mark of a perforation.” [Later.] “It was charming under the trees by lantern light, and one night in particular I remember, when I caught the large moth with *eyes* (*Caligramma Latona*), the air seemed full of moths, and the heavy fruit-moths banged at my light, coming again and again to the charge. I must tell you that the fig, if over-ripe, or if the weather is at all damp, bursts, and the smaller moths can generally find a place to suck at; but the fruit-moth seems to prefer to pierce a fresh place, even on cracked fruit, leaving a little spot like a pin prick, but from that spot the fruit quickly decays; the peaches especially get a little rotten spot, and drop off at the slightest touch. I have often wondered that the moth could pierce the rough rind of a not very ripe St. Helena peach, but they spoil them when they are quite green. I am certain that they pierce the fruit to suck the juice *only*, the trunk being used for this purpose. I have watched many; they will let me hold a light quite near to them.”

[It will be understood that the somewhat reiterated statements above have reference to questions put by myself.]

“The large, heavy, variously marked moths [*Achæa Lienardi*, Bdv.] feed with the ‘fruit-moths,’ often upon the same fig, but are shy, and I cannot watch them so well. There are so many other species that it is hopeless to sort them out, but they feed at the fruit, either that upon the tree, or on that fallen underneath, and I think that they find a broken place in the skin. I wondered about *Audea ochripennis*, but though it was common with *Monteironis* for a little while at the fermented figs upon the ground, as well as on the trees, it was shyer, and did not seem to come to the peaches.”

[Other species at the fruit were indeed numerous:—*Audea catocala*, rarely; *Serrodes inara*, in two or three varieties; *Ericeia unangulata*, *Trigonodes obstans* (more plentiful recently at flowers), *Pseudophia Tirrhæa*, not commonly; *Ophiusa melicerta*, *O. harmonica*, rarely, *O. mormoides*, *O. griseimargo*, Hpsn., *Mazula capensis*, once, *Dysgonia Faber*, *Polydesma umbricola*, *P. umbrina*, *Anophia fatilega*, rarely, *Agrotis segetum*, *A. biconica*, *A. spinifera*, *A. munda*, *Mentazya amaturo*, *M. rimosa*, rarely, *M. decipiens*, in plenty, *M. atosignata*, *Azylia dividens*, *Euplexia conducta*, *Laphygma exigua*, *L. orbicularis*, *Eulaphygma abyssinica*,

Carudrina obtusa, *Leucania Loreyi*, *L. tacuna*, Feld., *L. torrentium*, *L. monosticta*, *Churia iconica*, *Cosmophila sabulifera*, *C. erosa* and its variety *xanthyndyna*, *Oresia argyrosigma*, *O. emarginata*, *Deva natalensis*, *Prodenia littoralis*, and many more, some of them apparently quite new.]

[From a much more recent letter.] "These, *Achæa Lienardi* and *Serrodes inara*, are so wonderfully abundant this year as to cause general comment and notice in the papers. They are mostly obtained from the peaches, and they spoil the fruit in the same manner as the 'fruit-moth.' It also is here, but is not so abundant as last year. The beautiful bronze moths with jagged edges, *Oresia argyrosigma*, are like them in their habits at the fruit; indeed, one often catches them together off the same peach."

[The fine parcel of these moths, to which the present letter refers, has, I fear, gone down with the "Mexican."]

Gonometa postica, ♂, Wlk.—"I have a creature with a yellow body which came out of a chrysalis brought from Annshaw. I scarcely expected anything, for it had been shut up in a tin for a long time, and when it emerged it caught its feet in some wadding and beat itself about. The cocoon was found on a tamarisk tree."

[This is one of the very few species in which the male is dwarfed, and distorted as to its wings, while the female is well developed, large and handsome, and the extraordinary appearance of the specimen in question is not due wholly to the wadding. Its cocoon is very coarse and hard, larger than that of *Lasiocampa quercus*, and its outer surface covered all over with the short, stiff, prickly hairs of the larva. It is fastened, down its side, to a stick, something in the same manner as that of *Odonestis potatoria*. The end is thrust widely open on the emergence of the moth, without the removal of a lid, and so remains, showing a perfectly round orifice.]

Gynanisa maia, Klug.—"Arthur has found a beautiful big flat moth under a tiny bush, probably just emerged, for they dug and found fragments of a chrysalis, which I send. The moth was spreading itself out on a cloudy day, perhaps drying its wings." [The fragments of the very large pupa-skin were quite dirty on the outside, showing that to all appearance this grand species, closely as it resembles a large *Saturnia*, forms no silken cocoon, but pupates nakedly in the earth!] "Arthur has caught two more, one in a doorway, the other at the foot of a tree, with the chickens pecking at it, which attracted his attention. It always seems to sit with its wings outspread. I have found another in the open veldt. They had been digging a little child's grave, and when we went down to the funeral I saw a little boy stamp violently on something in the grass, and looking closer I found this moth, and brought it home in my handkerchief." [Some of these specimens arrive in wonderfully fine condition, considering the treatment that they seem to have received.]

"I have reared two specimens from some very beautiful caterpillars that a native servant brought me. They were light green, with longitudinal rows of alternate silver and gold spikes all along the sides and back. The spikes looked like real gold and silver ornaments. They were found on *Mimosa*. I was thinking whether I could figure them, when they buried themselves." [From a larva subsequently found my correspondent sends a drawing of this noble creature. The spikes are fleshy tubercles, in dorsal and subdorsal rows, and the golden, and especially silver, metallic markings, are very wonderful.]

Eutricha pithyocampa, Cr.—“These three I reared from a great group of hairy caterpillars, which E. found all clustered together on a rose bush. I got several others from other places, and had a large tin full, but the fowls got at it and I only saved three. It was provoking, for I had fed them for weeks. I found that they clustered together in the same manner when they wanted to change their skins. The caterpillar is three inches long, very prettily marked with brown, black, and white, but is chiefly remarkable for the soft hairy fringe of long greenish greyish-white hairs all round it, sweeping the surface upon which it rests. I think that the black on the body consisted of black hairy tufts, but am writing from memory. I intended to paint one, but was too busy when they were full grown. The very large heavy moth (♀) is the fruit of a shooting excursion. Harry was out late shooting crows, and this moth fell from a *Euphorbia* tree; he marked the slight flutter of its wings, and where it fell, found it on a piece of fallen bark, got a pin and also some nicotine out of the pipe of his dusky henchman, pinned his trophy to the piece of bark and brought it home in triumph undamaged, except that the nicotine has made a black mark on the back of the thorax.”

[All these are of a redder tint and coarser texture of scales than is usual in this fine species of *Eutricha*, and the transverse lines are slightly more wavy and diffused, yet I think not more so than would indicate a local variety. This insect is in no way connected with the European *Cnethocampa pityocampa*.]

[From a very recent letter.] “I have now had the caterpillars from many sources. They have a way of congregating, generally on the stump of a rose bush, or on a tree, when they want to change their skins, I obtained most of them that way. One fine lot of them were under the bend of the stem of a wattle tree; another lot were found when small in a dead aloe-stump. Sometimes I think that a wet or stormy afternoon drives them to such a situation. The favourite food is rose, or else the white thorny acacia; I have had single caterpillars from *Mimosa*, which much preferred the other diet; and a lot found very young upon maiden-hair fern also chose rose as soon as they could get it. They are not very easy to feed up; one lot took a bad turn when nearly full grown and died off; they had been feeding about five months. There is considerable difference in size, those which have been fed up from tiny larvæ being very much smaller than those found full-fed and ready to spin. Some of the last large ones had a pretty tinge of purple at intervals along the back.”

[With this information was a figure of the full grown larva, which shows the dense prostrate lateral fringe of depressed blue-grey hairs, extending on each side to more than the breadth of the larva; the head orange-yellow; the second segment white at the top, with a broad, bright red band across the hind edge, and large black blotches on the shoulders; remainder of the body bright red, except the dorsal region, which is broadly but irregularly white, and has a large black blotch each upon the third, fourth, and eleventh segments. The half grown larva is umbreous, with the lateral fringe short and of the same colour, a row of white spots down the back, and black-brown spots between them and on tufts at the sides. Dead and dried larvæ sent at the same time attest the correctness of the drawings; pupæ are sent also, which are dark red-brown, with abundance of very short, lighter red bristles upon the back of the thoracic and abdominal regions; and cocoons, which are large and rather loose and soft, of pale yellow or pale greenish-brown silk, spun up among the leaves of the food-plant, and often fixed firmly to the twigs.]

WILLIAM WATKINS, Entomologist, EASTBOURNE.

—o—o—o—
**FINEST STOCK of LEPIDOPTERA, COLEOPTERA, &c.
IN THE KINGDOM.**
—o—o—o—

Collections continually arriving from the least known localities, containing new and scarce species. Prices to suit all buyers.

Selections carefully and cheerfully sent for choice anywhere here or abroad.

Healthy Larvæ and Pupæ; a large stock always on hand.
LISTS FREE.

ENTOMOLOGICAL APPARATUS AND CABINETS.

Best articles ONLY. See numerous Testimonials.

Collectors abroad respectfully reminded that the most liberal Cash Prices are always paid for desirable species.

Most complete Reference Collections for naming. Terms on application.

General Catalogue, 80 pages, Free.

The Practical Scientific Cabinet Makers.

J. T. CROCKETT & SON

(Established 1847).


Makers of every Description and Size of Cabinets, Cases, Store
Boxes, Apparatus, and Appliances,

And Dealers in all kinds of Specimens for Entomologists, Botanists,
Ornithologists, Geologists, Mineralogists, Numismatists, Conchologists, &c.,
and for the use of Lecturers, Science Teachers, Colleges, Students, &c.

MUSEUMS FITTED AND ARRANGED.

Specially made Cabinet for Birds' Eggs and Skins. The Drawers
graduate in depth, and are all interchangeable.

ALL BEST WORK. ESTIMATES GIVEN.

 All Goods at Store Prices. Great advantages in dealing direct with the Makers.

Send for Full Detailed Price List before ordering elsewhere.

7a, PRINCE'S STREET, CAVENDISH SQUARE, LONDON, W.

Factories—34, RIDING HOUSE STREET and OGLE STREET, W.

*Complete in one thick volume, royal 8vo, with 59 plates engraved on copper
from the author's drawings:*

**A MONOGRAPHIC REVISION AND SYNOPSIS OF THE
TRICHOPTERA OF THE EUROPEAN FAUNA.** By ROBERT McLACHLAN,
F.R.S., F.L.S., &c. Price, £3 10s.

First Additional Supplement (with 7 plates), Price, 8s.

London: GURNEY & JACKSON, 1, Paternoster Row, E.C.

Berlin: FRIEDLANDER und SOHN, 11, Carlstrasse.

ERRATUM.

Page 124, line 6 from bottom, for "*Specophaga*," read "*Sphecophaga*."

ICHNEUMONS WANTED.—Will Lepidopterists and others who may breed or otherwise capture Ichneumons be so kind as to send them, with where possible their hosts' names, to

CLAUDE MORLEY, F.E.S., Bath Street, Ipswich,

who is commencing the study of these interesting parasites ?

FOR SALE.—LARVÆ AND PUPÆ of very many of the BRITISH LEPIDOPTERA; also fine and well-set specimens of BRITISH LEPIDOPTERA—ACULEATE HYMENOPTERA—SAW FLIES—ICHNEUMONS—COLEOPTERA—DIPTERA—HEMIPTERA—NEUROPTERA.

Preserved Pupæ, Pupa Cases, and Cocoons of Lepidoptera, &c.

For Price Lists, which are separate, apply to—

W. H. HARWOOD, Colchester

Scale of Charges for Advertisements.

Whole Page.....£2. Half Page.....£1 1s. Quarter Page.....12s. 6d.

Lowest charge, 3s. 6d. up to 5 lines; 6d. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/-; Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6, 2/-, 2/6 per pair; Pocket Lens, from 1/- to 8/-.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6. Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipe, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

Now ready—The Exchange List and Label List compiled by Mr. Ed. Meyrick, B.A.,

F.Z.S., F.E.S., according to his recent Handbook of British Lepidoptera.

Exchange Lists, ½d. each, 4d. per dozen; Label Lists, 9d. each.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 2s. 6d.

SHOW ROOM FOR CABINETS, &c.

ONLY ADDRESS—

36, STRAND, W.C., Five Doors from Charing Cross,
LONDON.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (96 pp.) sent post free to any address on application

CONTENTS.

PAGE

New Corsican and French Micro-Lepidoptera (continued).— <i>Rt. Hon. Lord Walsingham, M.A., LL.D., F.R.S.</i>	217
Berkaunia prisca, Kolbe, a genus and species of Psocidæ new to Britain.— <i>R. McLachlan, F.R.S.</i>	220
Abstract of an article by Mons. A. Lancaster on migrations of Libellula quadrimaculata in Belgium in June, 1900, with notes by <i>R. McLachlan, F.R.S.</i>	222
Agrion hastulatum, Charp., a new British Dragon-fly.— <i>R. McLachlan, F.R.S.</i>	226
Crabro carbonarius, Dahlb.: an addition to the British list.— <i>E. Saunders, F.L.S.</i>	227
Nabis brevis, Scholtz: an addition to the British Hemiptera.— <i>Id.</i>	227
A special structure in the larva of Eriocampa limacina.— <i>T. A. Chapman, M.D., F.Z.S.</i>	228
Some undescribed species of Trogophleus, with a new genus.— <i>D. Sharp, M.A., M.D., F.R.S.</i>	230
Pachyta sexmaculata, L., &c., at Nethy Bridge, Inverness-shire.— <i>G. C. Champion, F.Z.S.</i>	235
Coleoptera in the Chesham district.— <i>E. Geo. Elliman</i>	236
Supplementary note on the distribution, &c., of Anchomenus quadripunctatus.— <i>G. C. Champion, F.Z.S.</i>	236
Oxypoda longipes, Muls., in Morayshire.— <i>A. J. Chitty, M.A., F.E.S.</i>	237
Emus hirtus in Alderney.— <i>W. A. Luff</i>	237
Coleoptera at Crickhowell, South Wales.— <i>Rev. Theodore Wood, F.E.S.</i>	237
Vanessa Antiopa in Suffolk.— <i>E. J. Singleton Smith, 237: at Huntingdon.—W. F. Beauford, 238: near Crawley.—Major R. H. Brown</i>	238
Colias Hyale, L., and Edusa, F., and other Rhopalocera in East Kent.— <i>A. J. Chitty, M.A., F.E.S.</i>	238
Colias Hyale, L., and Edusa, F., near Croydon.— <i>Harry D. Gower, 238: in Kent and South Essex.—Col. C. E. Partridge, 238: in Suffolk.—Claude Morley, F.E.S., 238: near Dover.—F. W. L. Sladen, 239: in Somersetshire.—Arthur Cottam, 239: in Hertfordshire.—Id.</i>	239
Colias Edusa in Shropshire.— <i>G. H. Kenrick, F.E.S.</i>	239
, &c., at Totnes.— <i>A. H. Swinton, F.E.S.</i>	239
Colias Hyale, C. Edusa, Papilio Machaon, and Lampides bætica in Guernsey.— <i>W. A. Luff</i>	239
Lampides bætica bred in Guernsey.— <i>George Baker</i>	240
Lycena Bellargus (Adonis) in Hertfordshire.— <i>A. Cottam</i>	240
Deilephila livornica near Croydon.— <i>Harry D. Gower</i>	240
Hermaphrodite Argynnis Paphia-Valezina.— <i>W. F. Urwick</i>	240
The "Schill Collection" of Lepidoptera.— <i>Eds.</i>	240
Dragon-flies in Inverness-shire and Sutherlandshire.— <i>R. McLachlan, F.R.S.</i>	241
Cordulegaster annulatus, Latr., in N.-W. London.— <i>J. W. Williams, M.R.C.S., F.L.S.</i>	241
A locality for Oxygastra Curtisii.— <i>H. Goss, F.L.S.</i>	241
Two species of Psocus, allied to Ps. bifasciatus, Latr., likely to occur in Britain.— <i>R. McLachlan, F.R.S.</i>	242
Astata stigma, Pz., in North Wales.— <i>Willoughby Gardner</i>	242
Sirex gigas in Dumbartonshire.— <i>J. R. Malloch</i>	242
Occurrence of Stilbum splendidum, F., v. amethystinum, F., in England.— <i>P. B. Mason, M.R.C.S., F.L.S.</i>	243
Vespa austriaca, Panz., in Scotland.— <i>W. Evans, F.R.S.E.</i>	243
Andrena lapponica, Zett., in Scotland.— <i>Id.</i>	243
Chortophila buccata parasitic? on Andrena.— <i>Id.</i>	243
Tachinidæ, &c., on oak trunks.— <i>Claude Morley, F.E.S.</i>	244
Catabomba pyrastris bred from Lepidopterous pupæ.— <i>Rev. E. N. Bloomfield, M.A., F.E.S.</i>	244
Fürnrohr's "Naturhistorische Topographie von Regensburg:" a hint to students of Collembola.— <i>R. McLachlan, F.R.S.</i>	244
A Supplementary Catalogue of the Library of the Entomological Society of London.— <i>Eds.</i>	245
REVIEWS.—The Injurious Scale Insects and Mealy Bugs of the British Isles: by <i>R. Newstead, F.E.S.</i>	245
Trichopterygia illustrata et descripta, a Monograph of the Trichopterygia, Supplement: by the late <i>Rev. A. Matthews</i> ; edited by <i>P. B. Mason</i>	246
SOCIETIES.—Birmingham Entomological Society	246
South London Entomological, &c., Society	246
Observations on Coccidæ, No. 18.— <i>R. Newstead, F.E.S.</i>	247

Second Series, No. 132.]
[No. 439.]

DECEMBER, 1900.

[PRICE 6d.]

DEC 20 1900

14, 055

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. XI.

[VOL. XXXVI.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,
Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz..
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

“NATURE,”

A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE. PRICE 6d.

“NATURE” contains Original Articles on all subjects coming within the domain of Science, contributed by the most eminent scientific writers of the day. It also contains Reviews of all recent scientific works; Correspondence Columns, which form a medium of scientific discussion and of intercommunication among men of Science; Accounts of the leading Scientific Serials; Abstracts of the more valuable papers which appear in foreign journals; Reports of the Proceedings of the Principal Scientific Societies and Academies of the World; and Notes on all matters of current scientific interest.

SUBSCRIPTIONS TO “NATURE.”

	£ s. d.	(To all places Abroad).	£ s. d.
Yearly	1 8 0	Yearly	1 10 6
Half-Yearly	0 14 6	Half-Yearly	0 15 6
Quarterly	0 7 6	Quarterly	0 8 0

Money Orders to be made payable to **MACMILLAN and CO., Ltd.**

Office: St. Martin's Street, London, W.C.

be opposed to the tarsus as one's thumb is opposed to one's fingers. The tip of the tibia is enlarged, and the jumping, I think, is done in the effort in bringing the tibial spur and the tarsus together. At all events, there is no other modification of leg structure which would seem to account for the superior jumping powers of the members of this group."

DACTYLOPIUS FORMICARIUS, n. sp.

♀ adult viviparous, very short ovate, convex above, and flat beneath. Colour whitish, thoracic and abdominal area with several distinct, narrow, transverse yellow-brown bars, which are confluent in the middle, forming a strong median line. Antennæ (fig. 2) of 8 joints, the width of the first almost equal to the length of the last, formula 8 (1, 2) (6, 7), 3 (4, 5). Derm thickly set with short stiff hairs, forming tufts at the margin of each segment; there are also numerous circular spinnerets, and near the anal opening two large eye-like glands. Legs short, and very stout, equal in length to the antennæ, tibio-tarsal joint central or nearly so. Anal ring of six long hairs. Anal lobes abnormally large, placed closely together, and thickly set with long stiff hairs and spines. Long., 2—3 mm.

Larva elongate. Anal lobes very faintly indicated, and furnished with very long hairs. Antennæ of 6 joints, formula 6, 1 (2, 3, 4, 5). Legs very long; tarsi longer than the tibiae; digitules to claw and tarsi simple.

Hab.: Matheran Hill, N. Konkan, 2000' alt, with *Cremastogaster*, sp. Wroughton collector. Ex Coll. Wasmann.

RIPERSIA MONTANA.

Ripersia montana, Newstead, Ent. Mo. Mag., 2nd ser., vol. ix p. 97, 1898.

Several specimens were collected by Mr. B. Tomlin at Courmayeur Italy, circa 4000 ft. alt. Sept., 1899, in ants' nests (sp. non det.).

In my description of this species (*l. c.*) I described the adult ♀ as possessing antennæ of six or seven joints. In the examples before me I find a female possessing both characters. Mr. Tomlin says the ants struggled to carry the *Coccids* away into their burrows.

RIPERSIA WASMANNI, n. sp.

♀ adult sub-ovate, rather flat, with the cephalic extremity slightly produced, colour red. Legs well developed, anterior pair extending beyond margin of the body. Antennæ (fig. 3) a little longer than the tibia and tarsus together, of six joints, the articulation of 3rd and 4th faint, and not constricted at the margin. Mentum biarticulate, and rather long; loop of rostral filaments extending a little beyond its apex. Anal ring with six stout hairs. Anal lobes indicated by single long hairs, which are placed well within the margin.

Long., 1 mm.

Hab.: "With *Lasius alienus*, F. (without *R. europæa*); Linz a/Rh., 10, '98; once together with *R. europæa* in nests of *L. alienus* at

x



Fig. 3.

Luxemburg; and once with *L. flavus* (without *R. europæa*), Linz (Rhineland)." Wasmann Coll.

Although Father Wasmann has found this species associated with *Ripersia europæa*, Newst. [Ent. Mo. Mag. (2), vol. viii, p. 167, 1897], it is quite distinct from the latter in the form of the antennæ, and the position of the anal lobes; furthermore, Father Wasmann informs me the colour of *R. europæa* is yellow.

LECANIUM, sp. ?.

Hab. : "Matheran, N. Konkan, sent without ants—probably with same *Cremastogaster* as *Dactylopius formicarius*" (Wasmann). Wroughton Coll.

A number of specimens were sent attached to the roots (?) of an unknown plant. In all probability the species is a new one, but the specimens are very small, and probably immature. In the absence of more reliable information I must withhold the description of the species; meanwhile trusting Mr. Wroughton will give the matter his further attention.

PERISSOPNEUMON, *n. gen.*

♀ adult possessing both marginal and ventral spiracles; anal, dorsal, and ventral openings, and above the latter a pouch-shaped cavity. Antennæ, legs, and rostrum present.

PERISSOPNEUMON FEROX, *n. sp.*

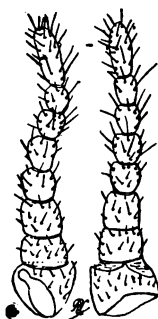


Fig. 4.

♀ adult elongate, longitudinally and transversely convex; segmentation distinct; legs, antennæ, rostrum, and ventral orifice piceous. Antennæ strong, and highly chitinised, of 8 joints (fig. 4), tapering from base to tip, basal and terminal joints longest, formula (1, 8) (2, 3) (4, 5, 6, 7), all with numerous fine hairs. Eyes ventral and near the insertion of the antennæ. Legs much stouter and longer than the antennæ, sparsely clad with hairs; claws stout and simple; digitules to claw fine simple hairs. Mentum biarticulate; filaments short. Dermis (fig. 5) almost covered with short stiff hairs, interspersed with large, irregular, ovate glands (*a*), with an opening towards the widest end. Spiracles on the ventral surface (fig. 7) four in number; those at the margin on the dorsal surface fourteen in number, seven on either side of the abdomen, and are of the form shown at fig. 5*b*, figs. 6 and 8; the exterior portion cylindrical, with the sides covered with circular spinnerets. Between the spiracles are large, clear, roughly crescent-shaped, valve-like organs (fig. 5*c*), and grouped glands (fig. 5*d*). Anal ring (fig. 9) without hairs, but a double series of circular spinnerets.

♀ adult elongate, longitudinally and transversely convex; segmentation distinct; legs, antennæ, rostrum, and ventral orifice piceous. Antennæ strong, and highly chitinised, of 8 joints (fig. 4), tapering from base to tip, basal and terminal joints longest, formula (1, 8) (2, 3) (4, 5, 6, 7), all with numerous fine hairs. Eyes ventral and near the insertion of the antennæ. Legs much stouter and longer than the antennæ, sparsely clad with hairs; claws stout and simple; digitules to claw fine simple hairs. Mentum biarticulate; filaments short. Dermis (fig. 5) almost covered with short stiff hairs, interspersed with large, irregular, ovate glands (*a*), with an opening towards the widest end.

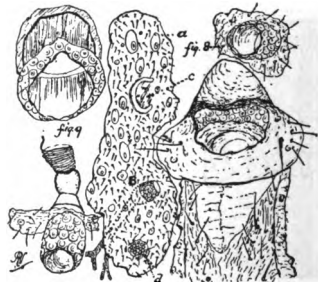


Fig. 6. Fig. 5. Fig. 7.

The spiracles shown at figs. 5 and 6 are drawn to the same scale, and show the marked difference in size between the dorsal and ventral sets.

Long., 7—10 mm. Lat., 4—5 mm.

Hab. : N. Konkan, India. "Kept in special nests, built for the purpose, by *Oecophylla smaragdina*" (Wasmann). Collected by Mr. Wroughton. Ex Coll. Wasmann, 1899.

It is much to be regretted that Mr. Wroughton has not furnished further particulars with regard to the economy of this species. To have known something of the nature and extent of the "special nests," which the ants are said to construct for the express purpose of housing the captive *Coccids*, would have been a valuable contribution to our knowledge of this exceedingly interesting branch of natural science.

The general character of the ♀ is strictly Monophlebid, but does not agree with anything known to me, and seems worthy of generic rank. Moreover, the marginal spiracles do not, I believe, exist in any other known species.

The description is from specimens preserved in spirits, and I can add nothing with regard to external characters.

Chester: September, 1900.

DROSOPHILA MACULATA, DUFOUT, A NEW BRITISH DIPTERON.

BY D. SHARP, M.A., M.D., F.R.S.

On June 1st last I captured a fly in the New Forest that I had not seen before, and on submitting it to Mr. Verrall and Mr. Collin, they both pronounced it to be something not in the British list. By searching in Mr. Verrall's continental collection it was soon discovered to be *Drosophila maculata*, Duf. The species is an Acalyptrate Muscid intermediate in size between a *Musca domestica* and a *Chlorops*, and is highly remarkable from its coloration; the head between the eyes is pure white. The thorax varies in colour according to the light; in some positions it appears to be brilliant white, and in others of a leaden hue; there is a pure white stripe on each side between the wing and the eye. The abdomen is pallid, but each segment is marked with large black spots. The legs are pale yellow.

Dufour says that the species is connected with *Boletus*. I think I found my specimen among old wood near Lyndhurst.

Cambridge: October 6th, 1900.

A NEW BRITISH ANTHOMYID.

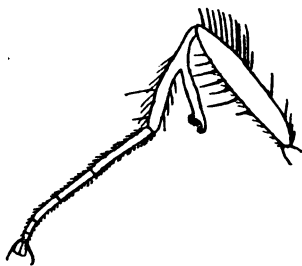
BY PERCY H. GRIMSHAW, F.E.S.

In a collection of *Diptera* made by the late George W. Ord in the Clyde district, and sent to me for identification, is an interesting species of *Anthomyia* not hitherto, so far as I am aware, recorded as British. This is *Hyetodesia aculeipes*, Zett., a small blackish species belonging to the group with black legs and short-haired arista, but easily distinguished from all other British forms by the remarkable appendage with which the hind tibia of the male is furnished. Only a single specimen, a male, of this singular insect was obtained by Mr. Ord, who captured it along with *H. incana*, Wied., and *H. longipes*, Zett., at Strathblane, on June 19th, 1899. In the key given by Meade ("Descriptive List," p. 4), *Hyetodesia aculeipes*, Zett., works out alongside *H. hirsutula*, Zett., and in Schiner's "Fauna Austriaca," vol. i, p. 618, it also comes next to that species, under the genus *Lasiops*, Mg.

The following description may be useful, in case this very interesting species should be met with elsewhere:—

HYETODESIA ACULEIPES, Zett.—Ins. Lapp., p. 674, n. 58 (1840); Dipt. Scand., iv, p. 1487, n. 96 (1845)—[*Aricia id.*]; Schiner, Fauna Austriaca, vol. i, p. 618 (1860)—[*Lasiops id.*].

Eyes sub-contiguous, with long hairs; antennæ short, black, with pubescent arista; epistome dark, with grey reflections, and very prominent, almost rostrate oral margin, palpi black. Thorax shining black, with glistening whitish shoulders, scutellum blackish, calyptæ whitish, halteres black (*not testaceous*, as Zetterstedt states). Abdomen greyish, very hairy, with broad, but not very distinct, black dorsal stripe; wings clear, outer cross vein straight, 3rd and 4th longitudinal veins very slightly divergent at the tip. Legs entirely black; fore and intermediate femora strongly and regularly ciliate, fore tibiæ with a single strong bristle on the outer side near the tip; intermediate tibiæ with three or four strong bristles; hind femora with strong bristles on the inner apical half, hind tibiæ slightly curved, with a double row of bristles on the outer surface; and two long bristles behind, one beyond the middle, and the other (the shorter) near the tip, inner surface quite bare, but furnished at one-third from the base with a strong and peculiar appendage pointing obliquely inwards at an angle of 45°, and as long as the remaining two-thirds of the tibia. This appendage is furnished with a blunt hook at the tip, turned towards the tibia, and below the tip on the side next the tibia with a short stiff brush of lighter-coloured hairs.



Hind-leg of *Hyetodesia aculeipes*, Zett. ♂

Edinburgh: September, 1900.

Length, 6—7 mm.

**COLEOPTERA FROM ICELAND AND THE FAROE ISLANDS,
COLLECTED BY N. ANNANDALE, ESQ., IN 1900.**

BY D. SHARP, M.A., M.D., F.R.S.

The fauna of Iceland has a considerable interest on account of the isolated and almost arctic position of the island. Its entomology is, however, far from completely known. In 1856 it was visited by Dr. Staudinger, who published lists of the Insects in the Stettin. Ent. Zeit., 1857. He procured altogether 312 species. Since then singularly little has been added to his list. It included 81 species of *Coleoptera*. In vol. xxvi of this Magazine, Mr. P. B. Mason gave a list of the Insects he met with during a visit to the Island. He mentions sixteen species of *Coleoptera*, three of which, viz., *Aphodius fœtidus*, *Otiorhynchus scabrosus*, and *Coccinella 11-punctata*, may be considered as additions to the list published by Staudinger, though it is possible that Staudinger's *O. rugifrons* may be the same as Mason's *O. scabrosus*.

In 1890 Dr. F. A. Walker published the names of some species of *Coleoptera* (Entomologist, 1890, pp. 374 and 376) he met with, but I think they make no addition to the Iceland Catalogue. Neither is any addition made in the paper by the same gentleman in J. Victoria Inst., xxiv, 1890.

In Bull. Soc. ent. France, 1892, p. xxviii, Dr. H. S  nac mentions fourteen species, three of which are not in Staudinger's list, viz., *Otiorhynchus atroapterus*, *O. ligneus* var., *Adalia* sp. n. near *hyperborea*. It is probable that the two *Otiorhynchus* were wrongly determined, but the *Adalia* apparently is an additional and interesting form; unfortunately we have had no further particulars about it.

Mr. N. Annandale was so good as to make small collections of *Coleoptera* for me in Iceland and the Faro   Islands last summer. He was at Reykjavik from July 1st to 14th, and all his *Coleoptera* were found there. They are 46 specimens and 15 species, viz. :—

Notiophilus biguttatus (8), *Nebria gyllenhali* (6), *Calathus melanocephalus* (8), *Amara quenseli* (2), *Patrobus septentrionis* (1), *Bembidium bipunctatum* (1), *B. islandicum*, n. sp. (3), *Agabus bipustulatus* (7), *Hydroporus nigrita* (1), *Creophilus mazilloeus* (1), *Stenus carbonarius* (2), *Cryptohypnus riparius* (1), *Barynotus Schonherri* (1), *Otiorhynchus blandus* (3), *Eirrhinus acridulus* (1).

It is probable that all these species are really included in Staudinger's list, though if so, one or two were erroneously named. Staudinger's *Notiophilus semipunctatus* is probably *N. biguttatus*. My *Bembidium islandicum* is almost certainly his "*B. nigricorne*, Gyll.?" Staudinger's *Stenus opacus* is a synonym of *S. carbonarius*; and his

"*Otiorhynchus monticola*??" is no doubt *O. blandus*. All the specimens brought back by Mr. Annandale can be perfectly matched by Scotch specimens, with the exception of the new *Bembidium*, which is a very interesting form, being allied to species found in Central and Southern Europe on the edges of snowfields at a great elevation.

BEMBIDIUM ISLANDICUM, n. sp.

Nigrum, superne subæneum, antennarum basi pedibusque sordide testaceis, femoribus basi piceo; elytris subtiliter seriatim punctatis, versus latera et apicem punctatura obsoleta. Long., $4\frac{1}{2}$ mm.

An *Bembidium nigricorne*, Gyll.?, Staudinger, Ent. Zeit. Stett., 1857, p. 282?.

Resembles *B. glaciale*, but readily distinguished by the colour of the legs and base of the antennæ, and by the longer terminal joints of the labial and maxillary palpi. Antennæ rather slender, the 1st joint and the bases of the three or four following joints yellow. Thorax cordate, much narrowed behind and sinuate at the sides, the posterior angles rectangular, very sharply marked, the base broadly and deeply impressed on each side, but with little punctuation. The sculpture of the elytra is entirely that of the *B. glaciale* group, there being six regular series of punctures, well marked at the base, but becoming quite indistinct on the apical half. The legs are dusky yellow; the tarsi darker, and also the base of the femora. Three individuals, one male.

This species belongs to the subgenus *Testediolum*, Gangl. Although Ganglbauer makes entirely black legs and antennæ a chief character of the subgenus, it is evidently an unimportant point. If we trusted to it this species would come into the subgenus *Peryphus*, with which, however, it has little in common.

The species has some resemblance to *B. nigricorne*, but belongs to a quite different division of the genus, there being no trace of an angle on the shoulder of the margin of the elytra. Staudinger, in recording with doubt *B. nigricorne* as amongst his Iceland *Coleoptera*, says "so determined by Dr. Schaum. Only a few examples; two of them from the north, found with *B. bipunctatum*. Certainly not common." Since then the species has apparently not been met with till it was found this year by Mr. Annandale.

Very little appears to be known as to the Fauna of the Faroë Islands. In *Coleoptera* I have been able to find only ten recorded species. They were found by Mr. Walker in 1890, and mentioned in the Entomologist for that year, pp. 374 and 375. Mr. Annandale spent several days there in the last half of June, and found 29 species of *Coleoptera*. His captures were mostly made near Thorshavn:—

They are *Carabus catenulatus*, *Loricera pilicornis*, *Notiophilus biguttatus*, *Nebria brevicollis* and *N. gyllenhali*, *Calathus cisteloides*, *Amara aulica*, *Pterostichus*

strenuus, *Patrobis septentrionis* and *excavatus* and *assimilis*, *Trechus obtusus*, *Bembidium tibiale*, *Agabus bipustulatus*, *Hydroporus griseostriatus*, *Cercyon flavipes*, *Tachinus rufipes*, *Quedius fuliginosus*, *Philonthus æneus* and *marginatus* and *fimetarius*, *Othius melanocephalus*, *Lesteva sharpi*, *Dermestes lardarius*, *Aphodius lapponum*, *Cryptohypnus riparius*, *Otiorkynchus blandus*, *Tropiphorus obtusus*, *Chrysomela staphylea*.

These species are all found in Scotland, and the specimens seem to be quite similar to Scotch individuals. Nearly all the examples were found under stones.

Cambridge: October 13th, 1900.

A SPECIES OF *SCAPTOCORIS*, PERTY, FOUND AT THE ROOTS OF SUGAR-CANE.

BY G. C. CHAMPION, F.Z.S.

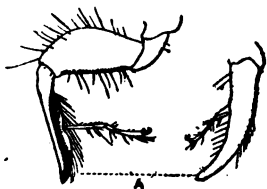
My friend Señor Don Juan Rodriguez has recently sent Mr. Godman many specimens of a species of this remarkable American genus from his estate in Guatemala, a locality well known to me, and where I have had the pleasure of collecting in his company. They are labelled as having been found underground, at the roots of sugar cane and other plants. The genus is an interesting addition to the Central-American fauna, nothing being known of it from that region when Mr. Distant concluded his enumeration of the *Cydnides* in the "Biologia Centrali-Americana" in 1889. The Guatemalan insect cannot be certainly referred to either *S. castaneus*, Perty, the type of the genus, or to *S. terginus*, Schiödt, both from Brazil (which were re-described by Signoret from specimens from Venezuela and Cuba respectively, and perhaps not correctly identified), and I have therefore ventured to name it.* The *Scaptocoris* in question, moreover, differs from the two species standing under the name *S. castaneus*, Perty, in the British Museum, one of them, from South America, being, no doubt, correctly named. It is therefore certain that there are several nearly allied Tropical American forms. Perty's diagnosis of the genus is so complete that there is little to add, beyond calling attention to the complete adaptability of the general structure of the insect for burrowing purposes, a fact not noted by him or by Signoret, and if the Guatemalan species really attacks the roots of the sugar cane, it may do a great deal of mischief. Signoret states that the hind legs have very small tarsi, but this is a mistake, no trace of them being

* The more recently described *S. minor*, Berg [An. Mus. Montev., i, p. 14 (1894)], also from Brazil, is a much smaller insect.

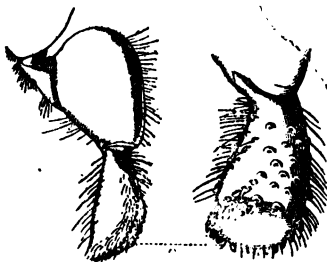
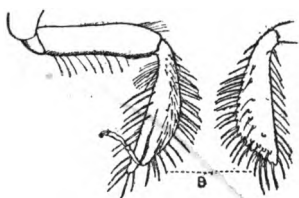
visible in any of the specimens before me, nor in those in the British Museum. In the allied Eastern genus *Stibaropus*, Dallas, they are present.

The following points of structure of *Scaptocoris*, as exhibited in the Guatemalan insect described below, are worth noting:—

The anterior legs (fig. A) have the tibiae produced into a very long, stout, curved



claw; the tarsi are elongate, quite slender, semi-retractile, inserted at about the middle of the tibia beneath, their basal joint a little longer than the second and third united. The intermediate legs (fig. B) have the tibiae stout and curved, and set on their outer face with scattered setigerous tubercles; the tarsi are short, slender, and retractile. The posterior legs (fig. C) have the trochanters long and greatly developed; the femora and tibiae are enormously incrassate; the femora smooth, and rounded on their anterior face; the tibiae (viewed in profile) subtriangular, obliquely truncated and flattened at the apex, their outer face being set with scattered tubercles, the flattened apical portion nearly encircled by a row of blunt teeth. The second joint of the rostrum is arcuately dilated beneath, forming a flattened plate, which fits into a deep groove between the anterior portion of the metasternum, close to the intermediate coxae and the inner portion of the long odoriferous orifice, there is a conspicuous transverse



ridge, which is slightly notched at the outer end, and behind and exterior to this there is a large, densely rugulose, opaque space.

SCAPTOCORIS TALPA, *n. sp.*

Very robust, castaneous, the under surface, the two apical joints of the antennae, and the legs fulvous, the head and knees often stained with piceous, the apices of the anterior tibiae and the teeth surrounding the apex of the hind tibiae black, the eyes red; the lateral margins of the pronotum, the under surface of the body, the rostrum, and legs set with very long bristly hairs. Head rounded at the sides, transversely wrinkled, shortly trilobate in front, the lobes rounded and about prominent; antennae with joints 1 and 2 equal in length, 3 much shorter than 2, 4 fully one-half longer than 3. Pronotum slightly constricted at the sides; the anterior lobe almost smooth; the posterior lobe strongly, transversely wrinkled, and with a few scattered punctures. Scutellum sculptured like the adjoining portion of the pronotum; the apex smoother, rounded and moderately dilated. Elytra with scattered, shallow, distinct punctures; membrane hyaline. Legs very robust; hind

femora enormously incrassate; hind tibiæ short, exceedingly stout, thickening outwards, their outer face set with scattered tubercles, the flattened apical portion smooth and nearly encircled by a row of blunt, stout teeth.

Nymph.—Head sculptured and shaped very much as in the adult, but without ocelli; pronotum short, and, like the scutellum, without transverse wrinkles; legs as in the adult, except that the anterior and intermediate tarsi are only 2-jointed.

Length (to apex of the membrane), 9—11; breadth of the pronotum, $4\frac{1}{2}$ —6, of the elytra, $5\frac{1}{2}$ — $6\frac{1}{2}$ mm.

Hab.: GUATEMALA, Capetillo (*Rodriguez*).

Apparently a common insect where it occurs in Guatemala. Larger and more robust than *S. castaneus*, the elytra distinctly punctured; the posterior tibiæ with stouter and blunter teeth (Perty says "denticulis coronata") encircling the flattened apical portion. I am unable to distinguish the sexes by external characters.

Horsell, Woking:

October, 1900.

NEW HAWAIIAN LEPIDOPTERA.

BY E. MEYRICK, B.A., F.Z.S.

Amongst some Hawaiian *Lepidoptera* recently sent me for determination by the Städtisches Museum für Naturkunde of Bremen were examples of the three following new species, which I have been requested to describe; the types are in the Museum. They were collected by Professor Schanisland. Two of these species are very interesting, being the only *Lepidoptera* obtained from the little island of Laysan. This is a coral island, crowning a submerged volcanic peak, and lies 800 miles W.N.W. of Kauai, the northernmost island of the main Hawaiian group, but is connected with it by a series of several similar little islets or reefs, showing the former existence of a more considerable development of land in this direction. Herr Alfken, of the Bremen Museum, informs me that six birds are endemic in the island, but three reptiles are identical with Hawaiian forms; two endemic plants are nearly related to Hawaiian species, the rest identical. The two *Lepidoptera* are of undoubted Hawaiian affinity, but apparently not very close to any described species.

AGROTIS EREMIOIDES, n. sp.

♂ ♀. 36—48 mm. Head and thorax brownish-ochreous, neck often yellowish tinged. Antennæ in ♂ bidentate, with triangular teeth. Abdomen in ♂ rather elongate. Fore-wings varying from dull light brownish-ochreous to fuscous; first and second lines sometimes faintly darker, slender, usually obsolete; orbicular rather

small, suboval, indistinctly dark-outlined or obsolete; reniform generally indicated by an undefined darker suffusion, sometimes obsolete. Hind-wings in ♂ pale whitish-fuscous, in ♀ rather darker.

Laysan; 26 specimens. Characterized by the uniform colouring and almost entire obsolescence of markings.

AGROTIS PROCELLARIS, n. sp.

♂ ♀. 41—45 mm. Head and thorax brown, collar with a blackish bar. Antennæ in ♂ bidentate, with triangular teeth. Abdomen in ♂ rather elongate. Fore-wings greyish-ochreous, mixed with fuscous and dark fuscous; first and second lines pale, edged with dark fuscous, dentate; spots fuscous, outlined with dark fuscous, orbicular round, connected with reniform on lower half by a spot of dark suffusion edged above with dark fuscous, claviform elongate, resting on first line, reniform transverse-oblong; subterminal line pale, edged with darker suffusion. Hind-wings in ♂ whitish-fuscous, suffused posteriorly with rather dark fuscous, in ♀ rather light fuscous, darker posteriorly.

Laysan; 2 specimens (♀ very poor).

SCOTORYTHRA DICERAUNIA, n. sp.

♂ ♀. 39—50 mm. Head and thorax brown. Antennæ whitish-ochreous, pectinations 6-, laterally black-lined. Abdomen pale ochreous, mixed with pale brownish, in ♂ 1½. Legs whitish-ochreous, spotted with fuscous, posterior tibiae in ♂ dilated, enclosing a whitish-ochreous hair pencil, posterior tarsi in ♂ ¾. Fore-wings elongate-triangular, apex slightly prominent, termen bowed, waved, oblique; rather dark brown or fuscous, with a few indistinct darker strigulae, in one specimen with undefined bands of lighter suffusion before first and beyond second lines; veins in ♂ tending to be marked with whitish lines, in ♀ sharply ochreous-whitish throughout; costal edge in ♀ sharply ochreous-whitish; first and second lines slender, waved, ochreous-whitish; first obtusely angulated above middle, second sinuate inwards above middle and more widely towards dorsum; discal spot narrow, crescentic, ochreous-whitish; cilia fuscous, basal half ochreous-whitish. Hind-wings with termen unevenly rounded, slightly waved; rather light fuscous, in ♂ becoming whitish-fuscous towards base; an indistinct post-median series of darker dots.

Molokai; 4 specimens. To this species also I now refer without doubt the specimen (of unknown locality) formerly assigned by me as the ♀ of *S. goniastis*; it is entirely similar to the ♀ now obtained. The present species is allied to *S. goniastis*, but is distinctly marked and easily recognised from all others by the white lines and discal spot.

Scotorythra triscia, Meyr., and *Phlyctænia synastra*, Meyr., were also obtained from Molokai, from which island they have not previously been recorded.

Elmswood, Marlborough:

September, 1900.

Vanessa Antiopa at Merton, Norfolk.—I saw a specimen of *V. Antiopa* in my garden at Merton on September 6th last, but not having a net was unable to take it.—J. HARTLEY DURRANT, Merton, Thetford: October 12th, 1900.

Colias Hyale and *Edusa* in Dorsetshire, Hampshire, and Surrey, 1900.—During the first ten days in August I saw specimens of *Colias Edusa* about Swanage, Studland, Corfe, Langton-Matravers, and elsewhere in South Dorsetshire. From the 11th to the 23rd August *C. Edusa* was abundant in clover fields and on the cliffs between Christchurch and Lymington, Hants; but after the latter date it gradually disappeared. I also saw specimens of it on the heaths and in the woods about Pokesdown, Hinton-Admiral, and in the south of the New Forest near Holmesley, Wootton, and Sway. The variety *Helice*, in every shade of colour, from pure white to light buff, was not uncommon, for I caught four specimens in two hours on the 14th August, and five others in the course of the next three days.

Colias Hyale was rare, and only nine specimens were seen and captured by me on the Hampshire Coast in ten or twelve days. It was said to be commoner inland at Old Sarum and elsewhere in Wilts. and North Hants.

On returning home on the 1st September I found *C. Edusa* and *C. Hyale* in the clover fields close to Surbiton, and about Hook, Chessington, and other places in the neighbourhood. Neither of these species was abundant, but *Hyale* was at least as common as, if not commoner than, *Edusa*, and it was quite possible to take three or four specimens of it in a few hours. It seems strange that *C. Hyale* should have been commoner far from the sea, in the suburbs of London, than on the coast of Hampshire.—H. Goss, Surbiton Hill: October 3rd, 1900.

Colias Hyale and *Edusa*, and other *Lepidoptera* at Greenhithe, &c.—During August both *Colias Edusa* and *C. Hyale* were not uncommon in this neighbourhood, the latter the more frequent of the two. In South Devon *C. Edusa* occurred in great numbers with its variety *Helice*, but I saw no *C. Hyale*. Both species were still appearing at Broadstairs during September. One or two *Vanessa Antiopa* near here have been reported. On September 20th I took in my moth-trap a fair specimen of *Tortrix semialbana*, a most unusual date for the appearance of the species I should think. Three worn specimens of *Spilodes palealis* on July 20th to 27th—the first time this species has visited my trap. *Camptogramma fluviata* was again taken there, and *Mamestra abjecta* occurred in unusual numbers.—A. B. FARN, Mount Nod, Greenhithe: October 1st, 1900.

Colias Hyale and *Edusa* at various localities, 1900.—I send you the following records for *C. Hyale* and *Edusa*:—2nd week in June at Beachy Head, both *Edusa* and *Hyale*, worn, and no doubt the parents of those occurring now. July 30th, *C. Hyale* at Worcester Park, Surrey. August 29th, *C. Edusa* on railway banks at Whitstable; *C. Hyale* plentiful in field of lucerne at Margate, fresh out. August 31st, *C. Hyale* and *Edusa* in lucerne fields and on railway banks, Folkestone, rather worn. September 6th, *C. Hyale* and *Edusa* on railway banks at Sidecup and Crayford. September 7th, *C. Edusa* at Eltham. September 17th, *C. Hyale* at Herne Bay, rather worn.—C. W. COLTHURP, 127, Barry Road, East Dulwich, S.E.: September 17th, 1900.

Chærocampa nerii, *Acherontia Atropos* and *Sphinx convolvuli*, near Weymouth.—An Oleander Hawk-moth (*Chærocampa nerii*) was brought to me alive in a card box on September 24th last by a little boy, and, strange to say, was almost uninjured. It was caught at rest by Mrs. New, a resident in the village of Chickerell, about half a mile distant from my house, who, knowing my tastes, kindly sent it to me. It is a beautiful specimen, a female, and $4\frac{1}{2}$ inches across the wings. This is the first hawk-moth rarer than *A. Atropos* or *S. convolvuli* (both of which species have, as usual, occurred here this year) that I have either caught or had brought to me during 30 years' collecting.—NELSON M. RICHARDSON, Montevideo, near Weymouth: October 10th, 1900.

Heliothis scutosa, Schiff., in South Devon.—On September 4th, whilst I was looking for *Colias Edusa*, var. *Helice*, in a clover field near Dartmouth, accompanied by my son, F. Capel Hanbury, a very pale looking moth flew up from under his feet. He made several unsuccessful attempts to catch it, and we both watched the moth fly into a hedge, marking the exact spot. On reaching it we found there was a rabbit-run into the next field, and after fruitlessly searching and beating the hedge presumed the moth had flown through the hole. Climbing over, we paced up and down in the grass for nearly half an hour, then abandoned the search and returned home to lunch, discussing what the moth could be, and arriving at the conclusion that it was probably a specimen of *Deiopeia pulchella*. After lunch my son said he would return to the clover field, "in case the moth is back again." His perseverance was rewarded. On reaching the field, and after a short search near the same spot, he saw his friend start up again, fly a few yards, and then commence buzzing like a *Plusia gamma* among the heads of the clover. Not to be beaten this time he crept up and put the net straight down over it. Great was his disappointment at finding that it was not *D. pulchella*, but only a much worn *Noctua* that he did not recognise. Returning, he brought his capture to Mr. Eustace R. Bankes (who was staying with us) and me, for identification. We soon saw what a prize had been captured. The specimen is a male, but unfortunately its condition leaves much to be desired, and our only regret was that we had not visited the field a week or two earlier, when, if bred there, it was probably in fine plumage. Mr. Bankes points out (1) that *Artemisia vulgaris*, a common food-plant of *H. scutosa*, is plentiful in the hedge beside which the moth was taken, and (2) that it is remarkable that although with us *H. scutosa* is generally, and probably with reason, regarded as a casual immigrant from the continent, not a single one of the ten British specimens recorded in Barrett's "British Lepidoptera" was captured near the south coast of England, Weston-super-Mare being the southernmost station from which it has heretofore been reported.—FREDERICK J. HANBURY, Stainforth House, Upper Clapton, N.E.: September 24th, 1900.

Retinia sylvestrana and *Stathmopoda pedella* at Guestling.—Both these rare or local species have occurred here this season. A single specimen of *Retinia sylvestrana*, Curt., was taken in the Rectory, having doubtless come from some species of *Pinus* growing near the house, while several specimens of *Stathmopoda pedella*, L., were taken among alders in Broomham Park on July 13th.

Acherontia Atropos seems to be abundant this year, as I have had sixteen, either as larvæ or pupæ, brought to me, and I have heard of others found in the parish.—E. N. BLOOMFIELD, Guestling: October, 1900.

Re-occurrence of Actocharis Readingi at Plymouth.—It may be of interest to Coleopterists to record the capture of *Actocharis Readingi*, Sharp, in the Plymouth district, on October 7th, at the spot where Mr. Keys and I obtained *Trogophlaeus anglicanus*, recently described by Dr. Sharp. Having failed to find the latter insect in the seaweed at the high-water mark, I proceeded to search in the shingle sub-jacent, and captured in a very short time seven specimens of *A. Readingi* (but no *T. anglicanus* were seen). On the 15th, in company with my friend Mr. Keys, about three dozen of this interesting beetle were taken in the same habitat, except three, which were found beneath stones below high-water mark. It is a fairly active insect, but easily overlooked, as it does not run about when the shingle is spread on the sheet, but remains beneath or between the particles, so that every little heap has to be minutely examined.* Although Mr. Keys and myself have frequently searched in the same spot during the earlier part of the year with a view to finding it, until now we have met with no success.

In conclusion, I may mention that *Sipalia testacea*, Bris., was found on the 7th in the cove, this being a new locality in this district for it. Amongst the other maritime beetles occurring commonly are *Aëpus marinus*, Ström, and *Robini*, Lab., *Cillenus lateralis*, Sam., *Trogophlaeus halophilus*, Kies., and *Micralymma brevipenne*, Gyll.—M. CAMERON, H.M.S. "Cleopatra," Particular Service: October 16th, 1900.

Zabrus gibbus, Linn., in the Lea Valley.—I have recently been fortunate enough to add this fine and local insect to our scanty list of Lea Valley *Carabidæ*. Its habitat is at the sides of the road between Edmonton and Chingford, where it skirts for a short distance some open grass land of a marshy character. I found my first specimen on August 25th, running on the road, and by searching at the roots of grass adjacent thereto I got three or four more, but I found it easier to get a series by walking slowly along the road and picking up running individuals. Owing to the close proximity of a well-frequented public house, to and from which numbers of "pilgrims" (principally employes at a large linoleum factory near by) were journeying, my proceedings attracted a certain amount of attention, some of which I could well have dispensed with! This new habitat for *Zabrus* is in fact as painfully "public" as that in which Mr. J. J. Walkert found it at Sheerness, but my experience of its habits differed from his in that I found it (and have found it since) quite a diurnal insect.

I am not aware whether *Zabrus* is known to hibernate, but I may mention that I found no trace of it in a moderate quantity of flood refuse in the same spot last winter. Prior to this refuse being deposited, the whole of the above-mentioned grass land had been entirely under water for several days.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N.: September 20th, 1900.

* This insect is much more lively in hot weather, according to my own experience, at Falmouth, a few years ago—G. C. C.
† Ent. Mo. Mag., ser. 2, vol. 5, page 209 (1894).

Hydrothassa hannoverana, F., in Cumberland.—I met with this species on June 2nd last, on *Callitha palustris*, near Little Salkeld, in the valley of Eden. Though it occurred in tolerable abundance, I only set a limited number of specimens, and on a return visit to the locality three weeks later, the species was not to be seen. Previously it appears to have only been found in Britain, in Yorkshire, but not, I believe, for some years.—F. H. DAY, 6, Currock Terrace, Carlisle : Sept. 22nd, 1900.

Bembidium varium, Ol., in Cumberland.—In Canon Fowler's work on the *Coleoptera* of the British Isles, the most northern locality of this species is given as Spurn Head, in Yorkshire. It may, therefore, be of interest to note that I took it freely last May on muddy places on Skinburness Marsh, at the Estuary of the Eden.—ID.

Philonthus punctus, Gr., &c., at Gravesend.—During the afternoon of September 18th I had the opportunity of doing a little collecting on the marshes below Gravesend, and under clods and dried up weeds in a perfectly dry pond, I was lucky enough to turn up a few nice insects. Single specimens of *P. punctus*, Gr., and of *Anisodactylus pæciloides*, Steph., were found (this is a locality in which both these insects were found by Dr. Power and other collectors in the old days) accompanied by immense numbers of *Agabus conspersus*, Marsh., and *Celambus parallelogrammus*, Ahr., and a specimen of *Copelatus agilis*, F. The soil was only faintly damp under this refuse; everywhere else the marshes were too dry and parched to make collecting of any use, the only other insects seen being both species of *Dichrotrichus* under stones on the river bank.—T. HUDSON BEARE, King's Road, Richmond, Surrey : October 4th, 1900.

Coleoptera and Hemiptera in the New Forest.—Among the insects taken during the last fortnight of August near Holmsley, New Forest, the following seem worthy of record :—*Velleius dilatatus*, F., under a stone, probably near a hornet's nest, as I saw several hornets in the immediate vicinity. *Nanophyes gracilis*, Redt. *Agrilus laticornis*, Ill., fairly common on oak. *Helops caruleus*, L., in numbers in fallen oak. *Halysia 16-guttata*, L. *Coranus subapterus*, De G. (developed form). *Monanthia 4-maculata*, Wolff. *Calocoris infusus*, H.-Sch., numerous on oak.—WILLIAM E. RYLES, 11, Waverley Mount, Nottingham : October 9th, 1900.

Coreus denticulatus, Scop., at Lincoln.—A few days ago I found a specimen of *Coreus denticulatus*, Scop. (*hirticornis*, D. and S.), on my doorstep at Lincoln. I have never seen the species in the district before, and it has not yet been recorded from any place so far north. It has mostly occurred in the South of England, but has been taken near Birmingham by the late Mr. Blatch, and on Mousehold Heath, Norfolk, by Mr. Edwards.—W. W. FOWLER, Lincoln : October 17th, 1900.

Odonata of East Sussex.—Since the publication of my paper, ante p. 150, Mr. E. Connold has taken the following species :—*Sympetrum sanguineum*, Müll., Guestling. *Anax imperator*, Leach, several at Guestling. *Calopteryx splendens*, Harr., Ashburnham. *Enallagma cyathigerum*, Charp., Ashburnham.—E. N. BLOOMFIELD, Guestling Rectory : October, 1900.

Aberdeenshire Odonata.—Mr. J. Mearns finds the following: *Leucorrhinia dubia*, Van d. Lind., Invercanny Moor, scarce; *Sympetrum scoticum*, Don., on most moors, abundant; *Libellula quadrimaculata*, L., Scotston Moor, Banchory, common; *Cordulegaster annulatus*, Latr., Invercanny Moor, common; *Æschna juncea*, L., Scotston Moor, Banchory and Nigg, common; *Lestes sponsa*, Hans., one specimen sent me, others have been taken by Mr. Mearns; *Pyrrhosoma nymphula*, Sulz., Banchory and Whitestripes, common; *Ischnura elegans*, Lind., Scotston and Invercanny, common; *Enallagma cyathigerum*, Charp., Bishop's Loch, common. Professor Trail tells Mr. Mearns that *Calopteryx splendens*, Harr., has occurred at Fyvie in abundance (I do not know how long ago).—ID.

The exact locality for the Aviemore example of Agrion hastulatum.—In answer to my query Col. Yerbury has obligingly stated the locality as the "backwaters of the Spey between the bridge at Aviemore and the mouth of the stream which runs down from Loch an Eilan."

As an additional good distinguishing character between *A. hastulatum*, ♂, and *Enallagma cyathigerum*, ♂, it may be stated that in the former, on the sides of the thorax, there is a short black line in the suture below both anterior and posterior wings, whereas in the latter it exists only below the posterior. Since my remarks at p. 226 were written I have examined the appendages of the Aviemore example under a very favourable light; there is no doubt about the identification.—R. McLACHLAN, Lewisham, London: October 2nd, 1900.

Halesus guttatipennis, McLach., and *Ecclisopteryx guttulata*, Pict., in Gloucestershire.—Both of these have been taken at Colesborne by Mr. James Edwards, the former on 26th September, 1896, the latter on 24th May and 25th June, 1898. I am not aware that either has been previously recorded from so far south in England.—ID.

A recent British example of Rhabdria cognata, Rbr.—This insect figures in the Stephensian collection, and in others contemporaneous therewith, but until now I had never seen a native example less than 60 or more years old. The other day, when going over some Norfolk Neuroptera for Mr. J. Edwards, I found a very large carded female specimen indicated as having been received from Mr. H. J. Thouless, and from the number on the card Mr. Thouless is able to say that he took the insect at Foxley Wood, Norfolk, on June 14th, 1886. Mr. Edwards has kindly allowed me to retain it.—ID.: October 11th, 1900.

A few "Neuroptera" from Sutherlandshire.—As a complement to the notes on Dragon-flies that appeared in our last No. (ante, p. 241), I give a few items towards a knowledge of local distribution. The insects were collected by Col. Yerbury in July and August, 1900.

Psocus fasciatus, F., Golspie. *Stenopsocus immaculatus*, Steph., The Mound.

Panorpa germanica, L., var. *borealis*, Steph.? One ♂ from Golspie, not quite of so pronounced a character as the examples taken further north at Tongue, by Mr. King, in 1883.

Hemerobius nitidulus, F., and *H. orotypus*, Wallengr., Golspie. *Sisyra fuscata*, F., Golspie.

Phryganea obsoleta, McLach., Golspie. *Colpotaulius incisus*, Curt., The Mound, a pair of a somewhat short-winged form. *Limnophilus marmoratus*, Curt., Golspie, one ♀ of a peculiar yellow-winged variety, with no trace of darker markings. *L. centralis*, Curt., *L. vittatus*, F., and *L. sparsus*, Curt., Golspie; *L. affinis*, Curt., The Mound. *Leptocerus cinereus*, Curt., Golspie. *Mystacides asurea*, L., Golspie, and *Philopotamus montanus*, Donov., Golspie.—ID.: September 18th, 1900.

Some Trichoptera from the vicinity of Seaton, South Devon.—The Rev. A. E. Eaton has handed to me his captures during the present year. They are not numerous, but to a certain extent select. I notice the more important, but have thought it scarcely necessary to go so minutely into precise local conditions as Mr. Eaton would have done had he written this note: *Crunoscia irrorata*, Curt.; *Berça pullata*, Curt.; *B. maurus*, Curt., abundant; *B. articularis*, Pict. (cf. ante, p. 180), 3 ♂, 1 ♀, only; *Diplectrona felix*, McLach.; *Wormaldia occipitalis*, Pict.; *Plectrocnemia brevis*, McLach. (cf. ante, pp. 149 and 180), 5 ♂, 1 ♀, not so common as in 1898; *Tinodes unicolor*, Pict., somewhat common, and a good "find," for I think only two old localities in this country were known for the species, and in one of these it is possible it no longer exists; *Hydroptila Maclachlani*, Klap.; *Oxyethira falcata*, Morton. As already remarked, this small list is somewhat select, and it concerns only a small corner of the coast of south-east Devon.—ID.: Oct. 14th, 1900.

Crabro signatus in the New Forest.—I brought back from a visit to the New Forest in July last about 24 specimens of the genus *Crabro* with variegate black and yellow abdomens. Among them are three females of the rare *C. signatus*. Most of these *Crabros* were found flying about dead trees, but, if my memory is not at fault, this was not the case with *C. signatus*. I believe I found them flying along a bank covered with heather. I may add that Mr. E. Saunders has been so kind as to confirm my determination of the species.—D. SHARP, Cambridge: Oct. 6th, 1900.

Crabro 5-signatus, Jurine, carrying off Ants in Corsica.—This little *Crabro* I captured at Bonifacio on June 7th in the act of taking small ants, which might have been *Lasius niger* from their size and habit, but as I unfortunately omitted to box any I cannot say for certain that they belong to that particular species. These ants were journeying to and from their feeding ground and nest, their path crossing the road; they were in a continuous stream, as often seen in England. The *Crabro* alighted close to their path, and at once seized one and bore it off. I watched this being done several times, but after waiting and watching for an hour I only succeeded in capturing four. Has this storing of ants for their future young been previously recorded?—G. C. BIGNELL, Saltash: September 10th, 1900.

Vespa austriaca in Scotland.—Re the record of the occurrence of *Vespa austriaca* (*arborea*) in Scotland by Mr. Evans in the Ent. Mo. Mag. for October. The species has been taken and recorded many years ago near Glasgow. In the Proc. Nat. Hist. Soc. of Glasgow, vol. ii, 1869—74, it is recorded by Mr. P. Cameron as occurring in the vicinity of Glasgow. The same gentleman, in his introduction to the list of *Hymenoptera*, published in the Handbook to the Natural History of Clydesdale, 1876, mentions its occurrence in the district. *V. austriaca* also occurs near Bonhill and at Linwood.—J. R. MALLOCH, Bonhill, Dumbartonshire: October, 1900.

Aculeate Hymenoptera on the coast of Kent.—On July 19th I took my breakfast and went down to the nesting spot of a colony of *Dasypoda hirtipes* on the Deal sandhills. I arrived at about 7 a.m., just in time to secure a good many specimens of each sex in magnificent condition, as they emerged from their burrows. At the same time I took several specimens of *Mutilla rufipes*, male, on a sandy patch close by. I also took another specimen of *Astata stigma* on the sandhills. At Kingsdown this year I took *Saropoda bimaculata* for the first time. It appeared at *Echium vulgare*. *Andrena Hattorflana* was very scarce on *Knautia arvensis*; I have, however, discovered a new locality for this fine insect at Tilmanstone, near Sandwich (about six miles inland from Kingsdown), where it was far from rare this year. *Andrena Cetti* also occurred pretty freely at Tilmanstone, on *Scabious*. This locality also produced *Cerceris labiata* on late mignonette, together with a few specimens of the rare *C. quadricincta*, all of these, however, being females. At St. Margaret's Bay I took *Pompilus (Aporus) unicolor* more freely than in any previous year. At first it appeared on wild carrot; but when the sea samphire came into bloom it went to that plant, in company with swarms of *Crabro cribrarius*, and one or two stray specimens of *Pompilus minutulus*, *Salix parvulus*, and *Diodontus minutus*. I noticed several females of *Pompilus unicolor* very busy licking the carpels of the sea samphire. This appeared to be their sole occupation during the ten minutes or so that they were under observation. *Andrena simillima* appeared again at the foot of the cliff, first on marjoram and bramble, afterwards on *Eupatorium*. The males of *Cilissa melanura* were also found again hovering over the flowers of Red *Bartsia*. As usual, the females were very difficult to find, but I took one or two by working very early one morning. *Cilissa hamorrhoidalis* were by no means rare in harebells. *Nomada jacobæ* has turned up this year more freely than usual, and I have reason to think that it may possibly associate with *C. leporina*. Late mignonette at St. Margaret's Bay produced *Cerceris ornata*, and one female of *C. quadricincta*. A female of *Crabro interruptus* was taken at Ripple, near Walmer. Some males were taken here last year. *Prosopis Masoni* was much less common all along the coast than usual. A female of *Chrysis neglecta* was taken around the burrows of *Odynerus spinipes* at St. Margaret's Bay.—F. W. L. SLADEN, Ripple Court, near Dover: September 1st, 1900.

Scottish Aculeate Hymenoptera: additions to the list.—The following Aculeates, all taken by me in Scotland during the last six or seven years, have not, so far as I can make out, been previously recorded from north of the Border. In every case the determination has either been made or confirmed by Mr. Edward Saunders.

Lasius umbratus, Nyl., near Gullane (E. Lothian), ♀. *Pompilus spissus*, Schiödt, near Kirknewton (Midlothian). *Agencia variegata*, Linn., Dunbar (E. Lothian). *Tachytes pectinipes*, Linn., Cromdale (Strathspey), and near Perth. *Pemphredon Shuckardi*, Moraw., Edinburgh, Inverkeithing (Fife), &c.; perhaps this is the *P. unicolor* of McGregor's Perth list. *Passalacus gracilis*, Curt., Aberfoyle (S.W. Perth). *Gorytes tumidus*, Panz., North Queensferry (Fife). *Crabro chrysostomus*, Lep., Luffness (E. Lothian). *Crabro vagus*, Linn., near Edinburgh and at Aberfoyle. *Sphecodes hyalinatus*, Schenck, Aberfoyle, ♂. *Andrena cingulata*, Fab., Dunbar. *Nomada flavoguttata*, Kby., near Midcalder (Midlothian). *Osmia rufa*, Linn., Dunbar.

A few other additions to the Scottish list, namely, *Vespa austriaca* (Midlothian), *Andrena fuscipes* (near Kingussie, and this year at Aberfoyle), *Andrena lapponica* (Midlothian), *Nomada borealis* (Dollar) and *Bombus soroënsis* (Elvanfoot, Lanarkshire), and one addition to the British list, namely, *Andrena ruficornis* (from Aberfoyle), have already been recorded by me either in this Magazine or in the Annals Scot. Nat. Hist.

Altogether I have taken close on one hundred species of Aculeates in Scotland; besides those named above, the following, though already on the Scottish list, are perhaps also worthy of mention:—*Ceropales maculata* (Callander and near Thornton in Fife), *Pemphredon lethifer* (Aberlady, Kinghorn), *Nysson spinosus* (Aviemore), *Crabro clavipes* (Aberfoyle), *Crabro varius* (Aberlady, North Queensferry, &c.), *Colletes suocincta* (Cromdale), *C. Daviesana* (Musselburgh), *Halictus leucopus* (St. David's in Fife, Blair Atholl), *Andrena nigriceps* (Luffness), *A. Wilkella* (Kinghorn), *A. analis* (near Midcalder, Thornton, &c.), *Cilissa hamorrhoidalis* (North Queensferry, Aberdour, &c., in Fife), *Nomada obtusifrons* (near Thornton in Fife), *Nomada bifida* (♂ Callander, ♀ ♀ Philpstoun in Linlithgowshire, about the burrows of *Andrena albicans*), *Megachile Willughbiella* (Dunbar), *M. circumcincta* (Kinghorn, Gullane, &c.), *Bombus Latreillellus* race *distinguendus* (Dunbar, Linlithgow, Aberfoyle, &c.), *B. Jonellus* (Balerno, near Edinburgh, Callander, Elvanfoot, etc.), *B. lapponicus* (Kingussie, Callander, Lomond Hills, Balerno, &c.; and also on the Isle of May and the Bass Rock, at the mouth of the Firth of Forth).

The commonest *Psithyrus* in the Edinburgh district is a form of *P. vestalis*, believed by Mr. Saunders to be the *P. distinctus* of Pérez. I have not yet ascertained which *Bombus* it lives with, but from what I have observed, I have no doubt *B. terrestris* is its host.

The *Osmia* from near Blair Atholl, recorded by me in 1899 under the name of *O. parietina*, is, Mr. Saunders now tells me, *O. inermis*, Zett.—WILLIAM EVANS, 38, Morningside Park, Edinburgh: October 12th, 1900.

Aculeate Hymenoptera in Scotland.—Besides *Crabro carbonarius*, Dhlb., which was described in our last number, Col. Yerbury met with the following Aculeates during his stay in Scotland which are worth recording, either on account of their rarity or for the localities in which they were found.

Myrmica rubra r. *lobicornis*, ♂ and ♀, Nethy Bridge, August 11th, 1900. *Pompilus spissus*, Schiödt, ♂, Nethy Bridge; *ungicularis*, Thoms., ♀, Golspie; *pectinipes*, v. d. L., ♀, Golspie. *Passalacus monilicornis*, Dhlb., ♀, Invershin; 2 examples with the labrum black, otherwise exactly agreeing with the ordinary form with white labrum. *Crabro peltarius*, Schreb., Nethy Bridge; *clavipes*, Linn., Nethy Bridge, Golspie, The Mound, Invershin; *palmipes*, L., Nethy Bridge; *varius*, Lep., Golspie. *Odynerus trimarginatus*, Zett., Nethy Bridge, Golspie; *pictus*, Curt., Golspie, Invershin. *Sphcodes ferruginatus*, Schk., ♀, Nethy Bridge. *Halictus leucopus*, ♀, Invershin. *Andrena lapponica*, Zett., ♀, Nethy Bridge, June 16, 1900; Craiglenchie, June 23rd, 1900. *Osmia inermis*, Gerst., one ♀ of this rarity at Nethy Bridge, July 1st, 1900. *Megachile circumcincta*, Lep., ♂ and ♀, Nethy Bridge, Golspie; one ♀ has a patch of white hairs on one side of the clypeus of the same colour as in the ♂, and doubtless due to a touch of gynandromorphism. *Cæliozyx acuminata*, Nyl., 3 ♂, Nethy Bridge. *Psithyrus*

vestalis v. *distinctus*, ♀, Nethy Bridge. *Bombus Latreillellus* v. *distinguendus*, ♀, Golspie; *lapponicus*, Fab., Craigellochie. The variety of *Passalacus monilicornis* is particularly interesting, as the white labrum has been generally considered to be the chief distinguishing character of the species, the unconstricted base of the 2nd abdominal segment, however, will always distinguish *monilicornis* from the other British species.—EDWARD SAUNDERS, St. Ann's, Woking: October 13th, 1900.

The Entomology of the new Victoria History of the Counties of England.—This "Victoria History" (published by Messrs. A. Constable and Co.) is a gigantic matter, under distinguished patronage, and careful editorship. Each vol. will be an *ouvrage de luxe* on large paper, in large type and with no expense spared. We are concerned only with the Entomology, which is edited by Mr. Goss. To ensure uniformity in nomenclature, &c., a list of books recommended has been distributed amongst the workers. The first County is "out," and Hampshire has the honour of leading off. The *Orthoptera* are very fully treated on by Mr. Burr; in the *Neuroptera* the *Odonata* are done in a general manner by Mr. McLachlan, and the rest in list form chiefly by Messrs. Morton and King; *Aculeate Hymenoptera* by Mr. Saunders, *Phytophaga* by Miss Chawner; *Coleoptera* by Canon Fowler and Mr. J. J. Walker; *Lepidoptera*, the *Macros* by Mr. Goss, assisted by Mr. W. H. B. Fletcher and Captain Savile Reid (this is by far the most exhaustive, and each division has a capital readable introduction), the *Micros* by Mr. Percy Bright, assisted by Messrs. E. R. Banks, C. G. Barrett, and W. H. B. Fletcher; *Diptera* are supplied by Mr. F. C. Adams; *Hemiptera-Heteroptera* by Mr. Saunders, and *Homoptera* by Mr. J. Edwards. Thus it will be seen that the list of coadjutors is fairly representative. Of course this portion is very unequal; in *Lepidoptera* nearly complete, in nearly all others very incomplete, and often rudimentary. It cannot be otherwise, and the only way to have partially avoided it would have been to have given notice of intention to bring out such a work some years beforehand. The uncorrected misprints are few, but there are some.—EDS.

Obituary.

Dr. Otto Staudinger.—With much regret we announce the death of Dr. Staudinger, which occurred at Lucerne, when on a visit, on October 13th, in his 71st year.

Review.

CATALOGUE OF EASTERN AND AUSTRALIAN LEPIDOPTERA—HETEROCERA IN THE COLLECTION OF THE OXFORD UNIVERSITY MUSEUM. Part ii, Noctuina, Geometrina, and Pyralidina: by Col. C. SWINHOE, F.L.S. (*Pterophoridae* and *Tineina*, by the Right Hon. LORD WALSHINGHAM, M.A., LL.D., &c., and JOHN HARTLEY DURRANT, F.E.S.); large 8vo, pp. 630, with eight chromo-litho. plates. Oxford: Clarendon Press, 1900.

The appearance of the concluding vol. of this useful work has been greatly delayed, but is none the less welcome. The grand total of species is brought up to over 3400. Of these scarcely 100 belong to the *Pterophoridae* and *Tineina*, so Col.

Swinhoe is virtually responsible for the entire work. In several ways the delay has been of service, and notably in harmonizing the views of Sir G. F. Hampson with those of the author. To all students of Indo-Australian *Lepidoptera* the work is of enormous value on account of the great care bestowed upon the synonymy and the large number of species figured, the latter largely consisting of those "described" by F. Walker, the search for whose types has been rewarded with success, save in a few instances. We notice here, as in other present-day works on exotic *Lepidoptera*, a tendency to avoid magnification of the figures of small species: this evil seems to be increasing, and should be put a stop to. A natural size figure of a small species is often useless, on account of the impossibility to bring out the details; the smaller the insect the larger the figure should be. So we think.

In our notice of Part i of this work (*cf.* Ent. Mo. Mag. (2), iii, p. 312) we had occasion to notice several curious consistent "misprints." These have disappeared in Part ii, save "*Hearsay*," which we still think should be "*Hearsey*." If the former be right, then the gallant old Indian general, who used occasionally to attend the meetings of the Entom. Soc. Lond., was, we think, a participator in the faulty rendering.

A few new species are described by Col. Swinhoe; that there are not more is probably owing to the delay. The book is mainly a synonymic Catalogue, and it is only those who have gone through the mill that have any idea of the enormous labour involved in compiling such a Catalogue.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *August 20th*, 1900.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. R. C. Bradley exhibited *Cucullia chamomilla* from his garden at Moseley, and living larvæ of *Acronycta aceris* from North London. Mr. G. W. Wynn, a very beautiful and varied series of *Triphaena fimbria*, bred from larvæ found at Marston Green last April and May. The upper wings varied from a light creamy-brown to a dark brown, nearly black, and one specimen was of the rarer mahogany colour; he also showed *Cucullia chamomilla* from Solihull. Mr. G. T. Bethune-Baker mentioned that a friend had taken fifteen *Plusia moneta* in a garden in Surrey this year, an increase on the number of any former year, tending to show that the species is becoming well established in England. All members remarked on the unusual abundance of *Plusia gamma* this year; the President and Mr. Bradley specially mentioned its numbers locally, and Mr. Wainwright had seen it swarming on the north coast of Norfolk in clover fields; they all seemed to think, however, that the specimens were fresh, and in good condition, scarcely suggesting immigration. Mr. Bethune-Baker, a drawerful of Palearctic *Pararge* and *Epinephela*.

September 17th, 1900.—The President in the Chair.

Mr. R. C. Bradley mentioned the occurrence of *Colias Edusa* (two specimens) in his garden at Moseley this year. A discussion followed on its occurrence this summer. Mr. H. Willoughby Ellis had seen it on the railway bank near Wednesbury, and had heard of it at Bromsgrove. Mr. P. A. Jackson had met with it in great abundance in Normandy, and wondered whether it usually occurred there in great numbers, or if it were specially common there this year as well as here. Mr.

G. T. Bethune-Baker asked if members had noticed the *Vanessida* in unusual abundance this year; he had seen many more than usual at Edgbaston. Mr. W. Harrison thought that they were more abundant than usual, and noted the occurrence of *Grapta c-album* at Harborne. Mr. H. W. Ellis mentioned the finding of twenty-eight larvæ of *Acherontia Atropos* in Bedfordshire; he also had it from Knowle, Warwickshire, and asked if other members had heard of it this year. Several intimated hearing of its occurrence locally, and Mr. Wainwright had received a larva from Cromer, Norfolk. Mr. R. C. Bradley showed a series of *Dioctria atricapilla* from the Stroud district, and a few *Leptogaster guttiventris* from the same place, also *L. cylindrica* from Haywood, Warwickshire. Mr. W. Harrison, living pupæ of *Nemeobius Lucina* from Witherslack, and remarked on its probable extermination there, as he had counted thirty-two entomologists hunting specially for that species and *Lycana minima*. Mr. H. W. Ellis, a nice series of *Coleoptera* collected in the Stroud district of Glos. during the Society's visit there at Whitsuntide this year: in five days he had taken ninety-four species, including *Oodes helopioides*, *Phytasia cylindrica*, *Cryptocephalus bipunctatus*, *Chrysomela varians*, a pair in cop. of the green var., *Lochmæa cratægi*, *Cistela luperus*, *Magdalis armigera* and *M. pruni*. Mr. Bethune-Baker, a pair of *Plusia moneta* taken by a friend in his garden in Surrey this year; also a drawer containing the genus *Pararge*, specially to point out how continental *P. Egeria* differs from our var. *agerides*, and runs through it into *xiphioides* from the Canary Islands, and *Xiphia* from the Madeiras.—COLLEBRAN J. WAINWRIGHT, Hon. Sec.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: October 8th, 1900.—

Mr. B. H. CRABTREE, Vice-President, in the Chair.

Dr. J. Cotton exhibited captures made on Simonswood Moss and at Llandudno during 1900. The former included a specimen of *Acronycta alni*. Mr. B. H. Crabtree, *Colias Edusa* and a series of *Agrotis cursoria* from St. Annes-on-Sea; likewise a wonderful variety of *Arctia Caja*, in which the upper wings were almost unicolorous dark brown, and the under wings yellow, with a dark brown mark at the base of each; also, on behalf of Mr. Harold Milne, two varieties of *Arctia plantaginis*, in which the black markings were replaced by a yellowish-orange tint, thus causing them to appear almost unicolorous: these specimens were male and female. In Mr. Day's beautiful exhibit were the following:—a fine dark form of *Smerinthus tilia*, a series of *Charocampa porcellus*, long and fine series of *Eulepia cribrum*, *N. cucullina*, *A. ripæ*, and *Anticlea sinuata*, the latter from Cambridgeshire larvæ. Mr. Mason, a magnificent series of *Pyrameis cardui*, *Argynnis Aglaia*, *Bombyx trifolii* (bred), *Agrotis ripæ*, *cursoria*, and other coast species; amongst his odd captures were *A. pyrophila* and *C. Edusa*, taken at Lytham. Mr. Massey, long series of the beautiful and rare *Pachnobia alpina*, *Taniocampa gothica*, and its mountain form *gothicina*. Mr. Tait, fine series of *Helictes Cinxia*, *Agrotis corticea* and *lunigera*, *Acidalia humiliata* and *Anticlea rubidata* from the Isle of Wight; also the living larvæ and imago of *Agrotis Ashworthii*. Mr. Thompson recorded *C. Edusa*, *A. Atropos*, and *M. stellatarum* from St. Helens, the latter abundant in the larval state in suburban gardens. Mr. Pierce brought for exhibition a living *A. Atropos*, which stridulated loudly on being disturbed. Mr. Johnson, bred series of *Nola cucullina* and *Geometra smaragdaria*; also a specimen of *S. populi*, in which the pink of the under-wings was suffused all over the insect; also *Zygana Minois*,

Sesia philanthiformis, and *Carsia imbutata*. Mr. Prince, series of *Erebria blandina* and *Cassiope*, *S. hyperanthus*, *G. rhamni*, *L. sinapis*, *T. quercus*, and *L. ægon*; Besides these north country captures, he showed long series of coast species. Mr. Collins, a part of his collection of *Geometrina*: it included specimens of a large number of the British *Eupithecia*, whilst *Melanthia* and *Melanippe* were also well represented.—FREDERICK BIRCH, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: August 9th, 1900.—Mr. A. HARRISON, F.L.S., Vice-President, in the Chair.

Mr. H. Moore exhibited a specimen of *Sirex gigas*, taken in Rotherhithe, and three species of *Orthoptera*, taken by himself in Folkestone Warren, viz.: *Lep-tophyes punctatissima*, *Thamnotrizon cinereus*, and *Platycleis grisea*. Mr. Adkin, a series of *Melanippe fluctuata*, taken this year, and commented on the three main types of variation in the central band. Mr. Carpenter, two nests of a leaf-cutter bee found in the folds of an old sack; it was remarked that all the bees emerged about the same time, the inmates of the last made cells first. Mr. Blenkarn, a very fine smoky variety of *Cosmotriche (Odonestis) potatoria*, bred from Eastbourne. Mr. F. M. B. Carr, a long bred series of *Lymantria (Psilura) monacha*, and contributed notes; the larvæ were from the New Forest.

August 23rd, 1900.—The Vice-President in the Chair.

Mr. R. Adkin sent for exhibition flower-heads of ivy from Eastbourne, and contributed notes on the eggs of *Cyaniris argiolus*. Mr. West, the following Hemiptera, all taken at Lee: *Oliarus Panzeri*, willows; *Idiocerus tremula*, on aspens; *I. vitreus*, on poplars; *I. albicans*, white poplar; *I. confusus*, on willows; *I. laminiatus*, on Lombardy poplars; and *I. populi*, on aspens; together with a larva of *Dicranura bifida* from W. Wickham. Dr. Chapman, series of specimens of *Melanippe fluctuata*, from Red Hill and from the Southern Alps; they were almost identical. Mr. Blenkarn, specimens of *Cosmotriche (Odonestis) potatoria* and *Lasiocampa (Bombyx) quercus*, var. *calluna*, from Eastbourne, *Spilosoma lubricipeda*, var. *radiata*, from Yorkshire; *Mesotype virgata (lineolata)* from Margate; and *Triphosa dubitata* from E. Dulwich.

September 13th, 1900.—Mr. W. J. LUCAS, F.E.S., President, in the Chair.

Mr. F. Noad Clarke exhibited a specimen of *Locusta viridissima*, taken at Deal. Mr. South, a bred series of *Zygana trifolii*, from near Oxshott. The cocoons were found well up the stems, as well as near the base of the grass in marshy ground. The specimens were identical with those taken on high and dry ground near Northwood. Mr. Lucas, several specimens of *Thamnotrizon cinereus*, an Orthopteron he had taken in the New Forest. Mr. Colthrup, a short series of *Lasiocampa (Bombyx) quercus* from Margate. Mr. Kemp, a specimen of *Aplecta occulta*, taken at sugar near Cromer. Mr. Turner, series of the following Coleoptera taken this year: *Crioceris asparagi*, from Petersfield; *Liopus nebulosus* and *Strangalia armata*, from the New Forest; and *Clytus arietis* from Abbot's Wood. Mr. West, the Hemipteron, *Derephysia foliacea*, beaten from ivy at Blackheath. Mr. Barnett, a specimen of *Polyommatus Corydon* of a curious brown coloration. Mr. Buckstone, a female specimen of *Æschna mixta*, taken at Shoreham, in Kent, where he had met with a number. Mr. H. Moore, the following species of *Lepidoptera* taken at Le Portel, near Boulogne: *Colias Edusa*, *C. Hyale*, *Pyrameis cardui*, *P. Atalanta*, *Vanessa Io*, *Aglais urticae*, *Polyommatus Icarus*, and *Papilio Machaon*, and read notes. Mr. Bishop read the Report of the Field Meeting held at Horsley on July 7th.—HY. J. TURNER, *Hon. Secretary*.

BUTTERFLIES IN THE AUSTRIAN TYROL IN JULY.

BY A. HUGH JONES, F.E.S.

I left London on July 14th, accompanied by my friend Mr. Alfred Halse, and after a somewhat hot and wearisome journey by way of Cologne and Munich, arrived at Innsbruck. The mountains round Innsbruck looked tempting enough for a few days' collecting, but our destination was Cortina, for which place we hastened on by an early train the following morning. The railway crosses the Brenner; although a low Pass, it is interesting, the scenery for the greater part of the route being very beautiful. I could see from the carriage windows that the railway banks and wood-sides were teeming with butterfly life, *Melanargia Galatea* and *Argynnis Paphia* being conspicuously abundant. At Toblach we left the railway, and after a drive of a few hours arrived at Cortina. I had been informed that Cortina (3970 feet) lay in a broad, highly cultivated, valley, which was not very suggestive of "happy hunting grounds," that its elevation was too low for "high up" species, too high for "low down" species, and not far enough east for Eastern species. All these statements proved to be more or less correct; yet apart from the Entomological side of the question, the Dolomites—or, to speak accurately, the "Ampezzo Dolomites"—proved a delightful excursion, and one that I shall never regret having made.

My first day's collecting was not very encouraging: where the grass was uncut produced but little, and the fir-woods still less—the grass being so closely fed down by cattle, only a few *Erebia ligea* were seen, yet where uncultivated ground could be found, there was a fair sprinkling of butterfly and moth life.

If we only ascend a few thousand feet, all will be changed we thought, so on July 19th, we started full of hope for the Paso Tre Croci (5955 feet), a walk from Cortina of about an hour and a half. On a grassy slope, soon after leaving Cortina, we found an abundance of *Melitæa didyma*, but the rest of the road to the top of the Pass was conspicuously devoid of insect life. Our destination was Lago Misurina (5890 feet); on the left of the Pass rose Monte Cristallo. We worked down the Val Buona, a very beautiful valley, at the base of the Sorapiss. The collecting ground appeared to be a great improvement upon that of the previous day; although there was an absence of flowering plants to attract butterflies, for *Erebia* it seemed an ideal spot, the grass not being "fed down," however, only one species, *E. Pharte*, was to be found, and that sparingly.

As often happens on collecting expeditions, I here became separated from my friend, Mr. Halse, and I saw him no more until night time. I retraced my steps, and eventually found the road to Lago Misurina. I was now in another valley, and I met with a fresh species, *E. Ceme*, but, like the other *Erebia*, it was by no means common.


Mr. Rowland-Brown, who had been collecting in the neighbourhood of the Stelvio Pass, arrived at the Hotel (Aquila Nera) in the evening, to our great pleasure. The following days were spent in collecting in different localities, but the results were the same. It is quite evident that Cortina is not a land of butterflies, as, although we had perfect weather, only about 40 species were observed over an area varying in altitude from, say, 4000 to 6000 feet.

After remaining ten days at Cortina, we were of opinion that the collecting ground should be changed, and so selected Brenner, being the highest point on the Brenner Pass (4485 feet). The village consists only of a few scattered houses, but the Hotel makes up for the deficiency, being, with its "dépendance," capable of holding probably one hundred persons; notwithstanding this we had some difficulty in obtaining accommodation. English there were none, and I think we were looked upon with suspicion, certainly, to say the least, we were not cordially welcomed.

Our first day's experience, July 27th, disclosed the fact that we were in far better collecting ground than at Cortina, at all events for *Erebia* and *Argynnides*. Between the Hotel and the little Brenner See, a distance not much over a mile, we met with six species of *Erebia*. *E. Manto* and *E. Melampus* being in the greatest abundance. The wood which slopes down to the Brenner See was a delightful spot, and rich in butterfly life. Here I met for the first time with *Argynnis Thore*; it had, however, been out some time, the specimens being much battered. *A. Amathusia*, *Niobe*, *Aglaia*, and *Euphrosyne* were all plentiful.

July 28th, a hot and cloudless day, we walked up to the top of the Post Alp, a little mountain on the north side of the Pass, the railway station being at its base. For the first hour the zigzag path through the wood was in the shade, and although pleasant for climbing, was not conducive to insect life. After leaving the fir trees behind, we found one butterfly particularly abundant, *Lycæna Pheretes*, of which we secured several females, usually so difficult to obtain. A grassy slope leads up to the summit (about 6500 feet). It was on this slope that we saw such an abundance of *Lepidoptera*—owing in a measure, perhaps, to the perfect day. At the summit *Pieris Callidice*

WILLIAM WATKINS, Entomologist, EASTBOURNE.

——
**FINEST STOCK of LEPIDOPTERA, COLEOPTERA, &c.
IN THE KINGDOM.**
——

Collections continually arriving from the least known localities, containing **new**
and **scarce** species. Prices to suit all buyers.

Selections carefully and cheerfully sent for choice anywhere here or abroad.

Healthy Larvæ and Pupæ; a large stock always on hand.
LISTS FREE.

ENTOMOLOGICAL APPARATUS AND CABINETS.

Best articles ONLY. See numerous Testimonials.

Collectors abroad respectfully reminded that the most liberal Cash Prices are
always paid for desirable species.

Most complete Reference Collections for naming. Terms on application.

General Catalogue, 50 pages, Free.

The Practical Scientific Cabinet Makers.

J. T. CROCKETT & SON

(Established 1847),


**Makers of every Description and Size of Cabinets, Cases, Store
Boxes, Apparatus, and Appliances,**

And Dealers in all kinds of Specimens for Entomologists, Botanists,
Ornithologists, Geologists, Mineralogists, Numismatists, Conchologists, &c.,
and for the use of Lecturers, Science Teachers, Colleges, Students, &c.

MUSEUMS FITTED AND ARRANGED.

Specially made Cabinet for Birds' Eggs and Skins. The Drawers
graduate in depth, and are *all interchangeable*.

ALL BEST WORK. ESTIMATES GIVEN.

 *All Goods at Store Prices. Great advantages in dealing direct with the Makers.*

Send for Full Detailed Price List before ordering elsewhere.

7a, PRINCE'S STREET, CAVENDISH SQUARE, LONDON, W.

Factories — 34, RIDING HOUSE STREET and OGLE STREET, W.

OXFORD UNIVERSITY PRESS.

Catalogue of Eastern and Australian Lepidoptera Heterocera

IN THE COLLECTION OF THE OXFORD UNIVERSITY MUSEUM.

Part II. Noctuidæ, Geometridæ, and Pyralidina. By Colonel C. SWINHOE, M.A.;
Lord WALSLINGHAM, M.A., F.R.S.; and J. HARTLEY DURRANT. *8vo cloth, price 42s.*

**London: HENRY FROWDE, Oxford University Press Warehouse,
Amen Corner, E.C.**

Among other notable species albinos of *Colias Heldreichi* (female) were taken, *G. rhamni*, var. *farinosa*, and *Lycana ottomanus*, while Mr. Elwes further expressed his opinion that a *Lycana* taken as a var. of *L. semiargus* was a distinct species. Miss Fountaine mentioned in connection with these exhibits that *Colias Heldreichi* swarmed on Mount Kelmos, from 4000 to 7000 feet; and Mr. Elwes remarked that Miss Fountaine was the first British collector known to have captured this insect. Mr. H. H. May, a variety of *Strenia clathrata*, taken on the Southdowns, in which the ground colour of the wings was of a uniform dark chocolate-brown. Mr. F. Enock, a male bee, *Stelis aterrima*, parasitic in the nests of *Osmia fulviventris*, and usually considered a rare insect. The specimen was taken on August 14th, 1900, in a garden at Holloway. Papers were communicated on "Descriptions of new species and a new genus of South American *Eumolpidae*, with remarks on some of the genera," by Mr. M. Jacoby; and on "*Lepidoptera-Heterocera* from Northern China, Japan, and Corea" (Part IV), by Mr. J. H. Leech, B.A., F.Z.S., &c.

October 17th, 1900.—The President in the Chair.

Mr. J. Digby Firth, The Grammar School, Chorlton-cum-Hardy, near Manchester, was elected a Fellow of the Society.

Mr. A. H. Jones exhibited a series of *Pararge Mara*, a light form resembling *P. Megera* from the Basses Alpes and the Cévennes; a dark form approaching *P. Hiera* from Cortina; and an intermediate form from the Italian Lakes; also a variety of *Lycana Corydon*, female, in which the under-wing showed a decided blue coloration, taken at Lago di Loppio, near Riva. Dr. Chapman suggested that the union between the three named species of *Pararge* was very near, if the species were not indeed identical. Mr. A. J. Scolliek, a specimen of *Cethosia cyane*, a species confined to India and the Malayan region, which had been taken this year on the wing near Norwich. It was suggested by Mr. Distant that this was a case of accidental importation, probably in the pupal condition. Mr. H. Rowland-Brown, specimens of *Erebia glacialis*, taken this year on the Stelvio Pass, showing transitional forms of the var. *Alecto*. He said that the typical form and the variety were not found flying together, but on opposite sides of the valley. Dr. Chapman observed that the darker specimens approached the form of *E. melas*, found in the neighbourhood of Cortina-di-Ampezzo. Specimens of *E. glacialis* also exhibited from Saas Fée and Evolens showed marked inferiority in size and brilliancy of colour. Mr. W. L. Distant, a piece of Hawkesbury sandstone from Australia, showing the borings of *Termites*, and in connection with the same communicated a note from the Proceedings of the Linnæan Society of New South Wales (Pt. III, 1899, p. 418), as follows:—"Mr. D. G. Stead exhibited specimens of Hawkesbury sandstone (1) from the sea-shore between tide marks showing the tunnelling of Marine Isopods (*Spheroma*) with the living animals *in situ*; and (2) from the hill-tops overlooking Port Jackson, offering examples of the borings which so often attract notice, and the production of which has been attributed to *Hymenoptera*, and also to the *Termites*. Since last meeting Mr. Stead reported that he had investigated the matter, and that, after breaking up a quantity of stone, he had come upon *Termites*, of a species at present undetermined, actually at work, specimens of which he exhibited. Mr. M. Burr, a male and female specimen of *Anisolabis colosseus*, Dohrn, from New South Wales—the largest known earwig in the world.—C. J. GAHAN and H. ROWLAND BROWN, *Hon. Secs.*

END OF VOL. XI (SECOND SERIES).

CHANGE OF ADDRESS.

A. H. HAMM, from 52, St. Mary's Road, to 22, Southfield Road, Oxford.

EXCHANGE.

Desiderata: D. pulchella, E. vespertaria, P. trepidaria, E. porata, F. piniaria, C. plantaginis.—F. KINGSMAN, 4, Marmout Road, Peckham, S.E.

FOR SALE, in one or separate lots, a quantity of **Entomological Books**, and a few **Second-Hand Insect Cabinets**, also the fine Collection of **Papilios** formed by PAUL H. SCHILL. For lists apply to—

A. NOAKES, 13, Brownhill Road, Catford, London, S.E.

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1900–1901:—

Wednesday, December 5th, 1900, and (Annual), January 16th, 1901.

FOR SALE.—Birds, Butterflies and Insects of all descriptions from the Forests of Peru and Bolivia. Correspondence invited.

F. MATAVILETA, Casilla 449, Iquique, Chile.

Scale of Charges for Advertisements.

Whole Page.....£2. Half Page.....£1 1s. Quarter Page.....12s. 6d.

Lowest charge, 3s. 6d. up to 5 lines; 6d. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and *Desiderata*.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/-; Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6, 2/-, 2/6 per pair; Pocket Lens, from 1/- to 8/-.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6. Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipe, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vascularium, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

Now ready—The Exchange List and Label List compiled by Mr. Ed. Meyrick, B.A., F.Z.S., F.E.S., according to his recent Handbook of British Lepidoptera. Exchange Lists, 1d. each, 4d. per dozen; Label Lists, 9d. each.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 2s. 6d.

SHOW ROOM FOR CABINETS, &c.

ONLY ADDRESS—

36, STRAND, W.C., Five Doors from Charing Cross,
LONDON.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (96 pp.) sent post free to any address on application

CONTENTS.

	PAGE
Butterflies in the Austrian Tyrol in July.— <i>A. Hugh Jones, F.E.S. (concluded)</i> ...	273
Notes on rearing <i>Stauropus fagi</i> .— <i>Mrs. E. C. Basett</i>	275
On the distribution of <i>Nonagria brevilinea</i> , Fenn.— <i>F. D. Wheeler, M.A., LL.D., F.E.S.</i>	276
Two species of <i>Typhlocyba</i> not hitherto recorded as British.— <i>James Edwards, F.E.S.</i>	279
Notice on the synonymy of <i>Anopheles maculipennis</i> , Meig.— <i>Baron C. R. v. d. Osten Sacken, Hon. F.E.S.</i>	281
Outline of Course in Entomology at the Massachusetts Agricultural College...	283
<i>Orochares angustatus</i> , Er.: a genus and species new to Britain.— <i>Rev. Canon W. W. Fowler, M.A., F.L.S.</i>	286
<i>Pachyta sexmaculata</i> , L., in Scotland: another record.— <i>G. C. Champion, F.Z.S.</i>	287
Stray notes on a few Southport Coleoptera.— <i>G. W. Chaster</i>	287
<i>Centorrhynchidius mixtus</i> , Muls. and Rey, in Britain: an additional record.— <i>Claude Morley, F.E.S.</i>	287
<i>Heliothis armigera</i> bred at Tavistock.— <i>F. F. Southby</i>	288
<i>Psectra diptera</i> , Burm., in Ireland.— <i>J. J. F. X. King, F.E.S.</i>	288
<i>Halesus guttipennis</i> , McLach., in Wilts.— <i>E. Meyrick, B.A., F.Z.S.</i>	288
<i>Æschna mixta</i> , Latr., near Rye.— <i>Rev. E. N. Bloomfield, M.A., F.E.S.</i>	288
Occurrence in Kent of <i>Blaeus armatulus</i> , Ruthe, a Braconid new to Britain.— <i>A. Beaumont, F.E.S.</i>	288
A quarter of an hour on the Breck.— <i>Claude Morley, F.E.S.</i>	288
The generic position of <i>Drosophila maculata</i> , Duf.— <i>D. Sharp, M.A., M.D., F.R.S.</i>	289
REVIEW.—The Geological Antiquity of Insects, 2nd Edition: by H. Goss, F.L.S., F.G.S.	289
SOCIETIES.—South London Entomological, &c., Society	289
Entomological Society of London.. ..	291
TITLE-PAGE, INDEX, &c.	i—xv

NOTICE TO SUBSCRIBERS.

Vol. XI, Second Series (1900), ends with the present Number. Subscriptions, 6/- (POST-FREE) for 1901 are now due. Post Office or Postal Orders may be sent to the Editors, 1, Paternoster Row, London, E.C., or to either of them personally at his residence. The Subscription for nearly all foreign countries is now the same as that for the United Kingdom.

Intending new Subscribers should send in their names and addresses as soon as possible.

Any one wishing to discontinue his Subscription must give notice to that effect on or before the 20th inst., otherwise he will be considered liable for the ensuing Volume.

NOW READY,

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, Vol. XI, New Series (Vol. XXXVI), strongly bound in Cloth. Price 7/-.

Covers for binding, 1/- each.

London: GURNEY and JACKSON, 1, Paternoster Row. E.C.

Published last year—

THE COLEOPTERA OF SUFFOLK, a fully annotated Catalogue of 1763 spp., with sketch of Geology, Flora, &c. Price, 3s. 6d.

Published this year—

THE ACULEATE HYMENOPTERA OF SUFFOLK, a fully annotated Catalogue of 282 spp. (out of 374 in Britain). Price, 2s. 6d.

By CLAUDE MORLEY, F.E.S., &c.

Plymouth: J. H. KEYS, Whimpey Street.



3 2044 106 258 494

Date Due

JAN - 9 1969

